

Design

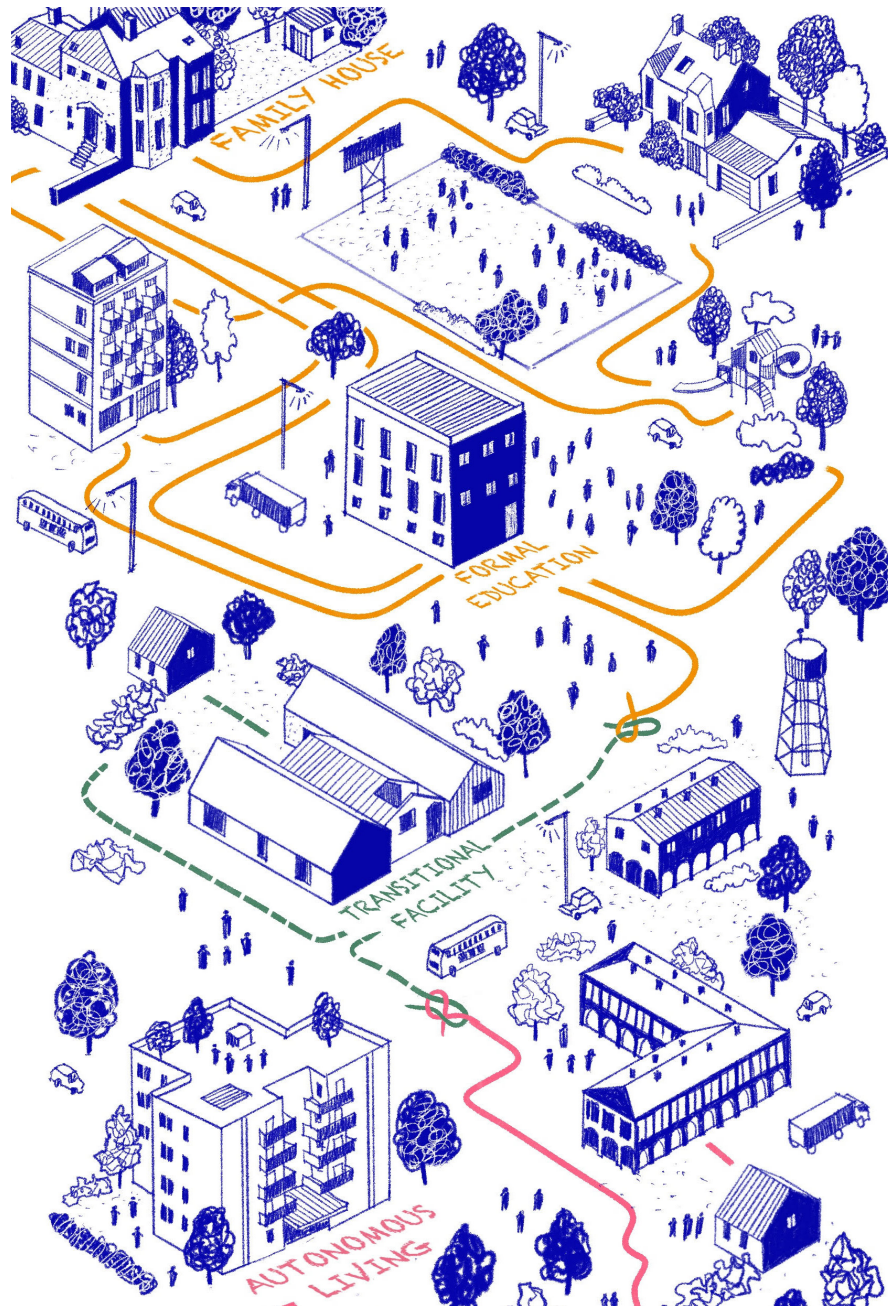
Transitional architecture for intellectually disabled youth.
From formal education towards autonomous living.

Delft University of Technology
Faculty of Architecture and the Built Environment
Designing for Health and Care: Towards a Healthy
and Inclusive Living Environment AR3AD110

Diana Bulatova (author),
Birgit Jürgehake (Design tutor),
Frederique van Andel (Research tutor)
Lex van Deudekom (Building technology tutor)

July 2023

Contents



4

Project introduction

6

Neighborhood-scale
intervention

10

Inclusive education site

14

The new program

40

Materiality of the
building facades

44

Strategies for building
transformation

58

Sustainability and
climate

Project introduction

Project precedents and outcomes

Families of young people with intellectual and/or developmental disabilities (YAIDD) reported that poor safety, social skills training and the unreadiness of the parents delays YAIDD from becoming autonomous adults. This master thesis focused on the Built Environment interventions that can improve Independence, Social participation and Wellbeing of the target group, to create a stimulating and welcoming setting specific to IDD. The study offers a suggested framework that could prepare YAIDD for autonomous living. The main functions that are present in the project are: short-stay residences, classrooms, community center and recreational areas. The following design concepts are addressed in detail through literature study and applied to the design at varying scales: Legibility and wayfinding, Prospect and refuge, Territoriality and control, Privacy and choice, Design for senses, Design for routine.

The approach followed throughout the book can be explained as design-by-research. The key findings that were gathered through literature review, interviews, site visits and case studies on the subject of Transitional architecture for intellectually disabled youth is accessible online with the following link:

https://issuu.com/dianabulatova/docs/transitional_architecture_for_intellectually_disab

In accordance with the research findings, the design decisions for this project were guided by key architectural principles, including Legibility and Wayfinding, Prospect and Refuge, Territoriality and Control, Privacy and Choice, Design for Senses, and Design for Routine.

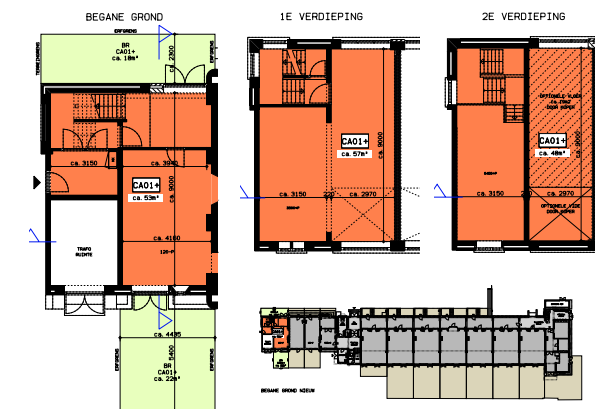
The chosen site is located in Laakkwartier neighborhood of The Hague, Netherlands. This selection was driven by the presence of various amenities in the vicinity and the connectivity to the rest of the country offered by the nearby train station. Specifically, the focus of this project centers around the transformation of an existing building within the area—a former school standing within a protected cityscape. The design outcome for this master thesis is to restore the building, rooted in the architectural legacy of Berlage, to its original purpose as a school while also accommodating activities beyond the realm of pure education.

To foster an environment encouraging independent living, the Youth Development Center aims to provide both short-stay and long-stay apartments. Furthermore, by incorporating an in-house physiotherapist and situating a community center adjacent to the school, the building strives to create an atmosphere that is both secure and integrated in the wider society.

Given the monument status of the building on a city-scale in The Hague, certain limitations were imposed on the expression of the main facade and the overall appearance of the structure. Consequently, the extension structure, which houses the community center and the "inner street," prominently features wood slats in stark contrast to the original ochre brick facade, thus harmoniously juxtaposing the old and the new elements.



Figure 1 Research book cover



1929-1931

School designed by architect
J.M. Luthmann

1931-2014

Laakkwartier public school

2014-2019

Vacant building after Primary School
Dr. Willem Drees relocated to the new
building

2019 -

Transforming the school into
20 DIY housing units

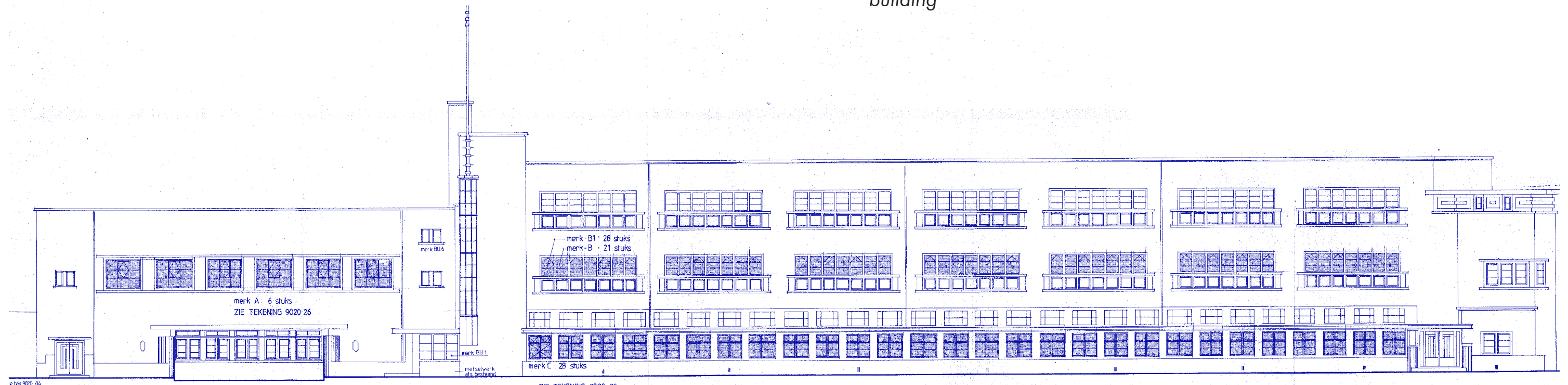


Figure 2 The brief history of Capadosestraat 9

Neighborhood-scale intervention

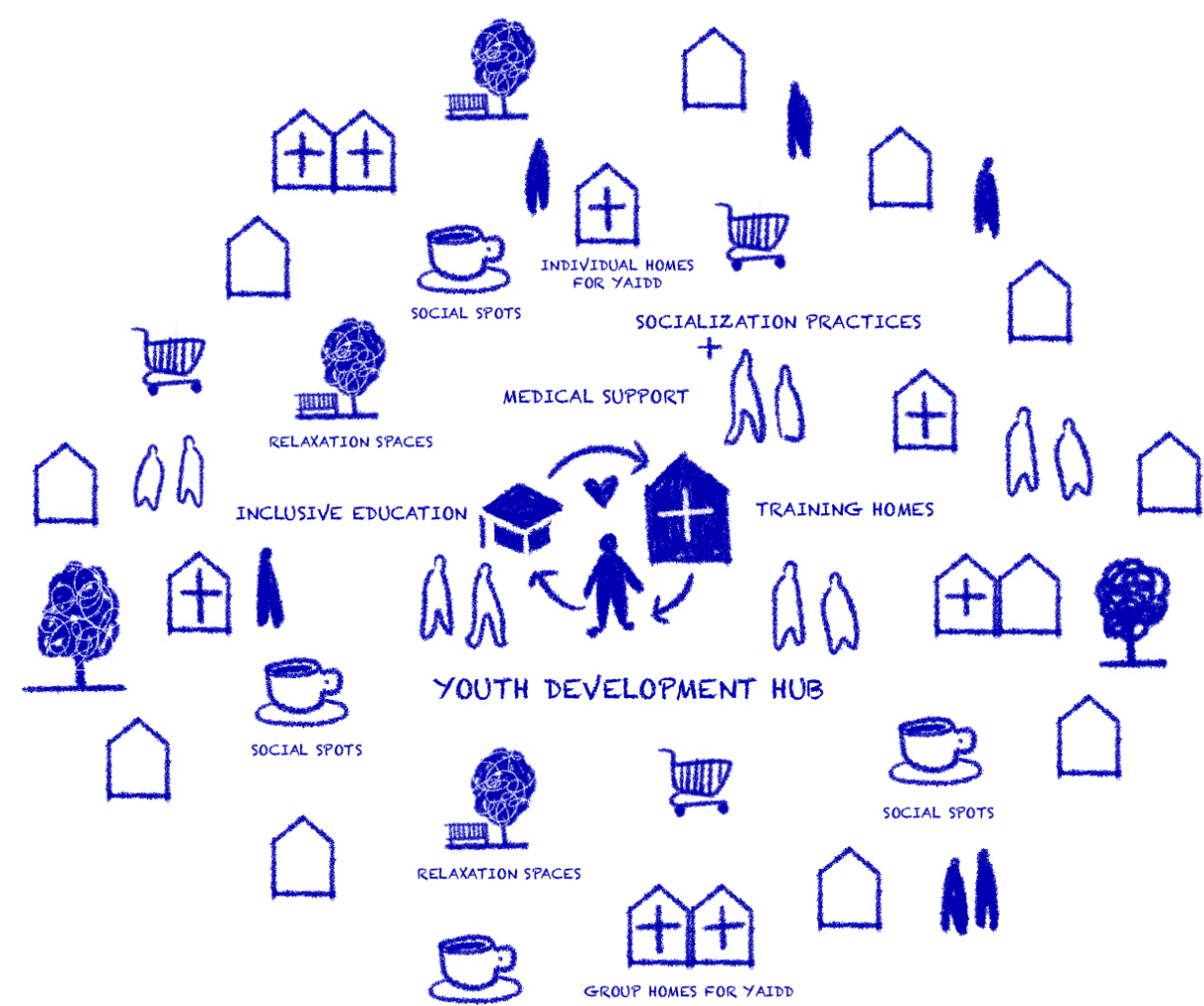
The value of the transitional facility for YAIDD to the site of Laakkwartier

During the urban analysis, the Laakkwartier area was found as a promising location for sustaining transitional development practices for Young Adults with Intellectual or Developmental Disabilities (YAIDD). The area offers a range of opportunities, including affordable coffee spots, leisure youth centers, green parks, as well as essential amenities such as supermarkets, GP offices, and hospitals. Furthermore, its proximity to Den Haag HS train station ensures excellent connectivity with the rest of the country.

To guide the integration of the new facility within the context of Laakkwartier, the vision put forth by the Pameijer organization (Thuis Haven concept) was adopted as the core idea. The selected building for transformation, a former school currently serving as DIY-homes, is part of an education ensemble surrounding a green field. By re-purposing this building into an inclusive facility for intellectually disabled youth, it aims to foster the normalization of the YAIDD group and facilitate their integration into the mainstream population of The Hague.

Strategically positioned alongside the Johann de Witt college, the chosen building forms a "gate effect" that welcomes visitors into the sport fields of the educational square. This effect is reinforced by the strong axial direction of Aarnout Drostlaan street, which features abundant greenery and water bodies. Drawing inspiration from this "gate effect," the design solution seeks to enhance the experience of passers-by along the street. An extension of the existing building is proposed to greet and engage pedestrians, while also framing the new access point to the sports fields located behind the transformed building. Through careful consideration of the building's placement and mindful transformations, it is envisioned that this facility will become a valuable asset to the community and contribute to the overall experience of Laakkwartier.

The presence of a green strip and a canal adjacent to the rear facade of the selected building was identified as a significant asset of the location. Recognizing this, a proposed extension of the building aims to utilize this space and establish a more-profound connection between the architecture and its natural surroundings. By extending the building, the transformation aims to harmonize design with the adjacent context. This approach allows for a seamless blend between the built environment and the surrounding landscape, fostering a more cohesive and visually appealing architectural composition.



	Regular mainstream homes		Relaxation spots: public parks, lakes, meditation spaces, snoezle locations
	Group home within the reach of medical and support staff		Social spots: dining and drinking, recreational activities, social clubs
	Individual home within the reach of medical and support staff		Medical support: psychologists, physiotherapists, emergency doctors
	Supermarkets/Essential shops		Training homes: regular studios for individuals and couples, with support staff available 24/7
	Autonomy-related education: classes on self-determination, work training, financial counseling		

Figure 3 - Youth Development Hub vision based on Pameijer's Thuis Haven concept

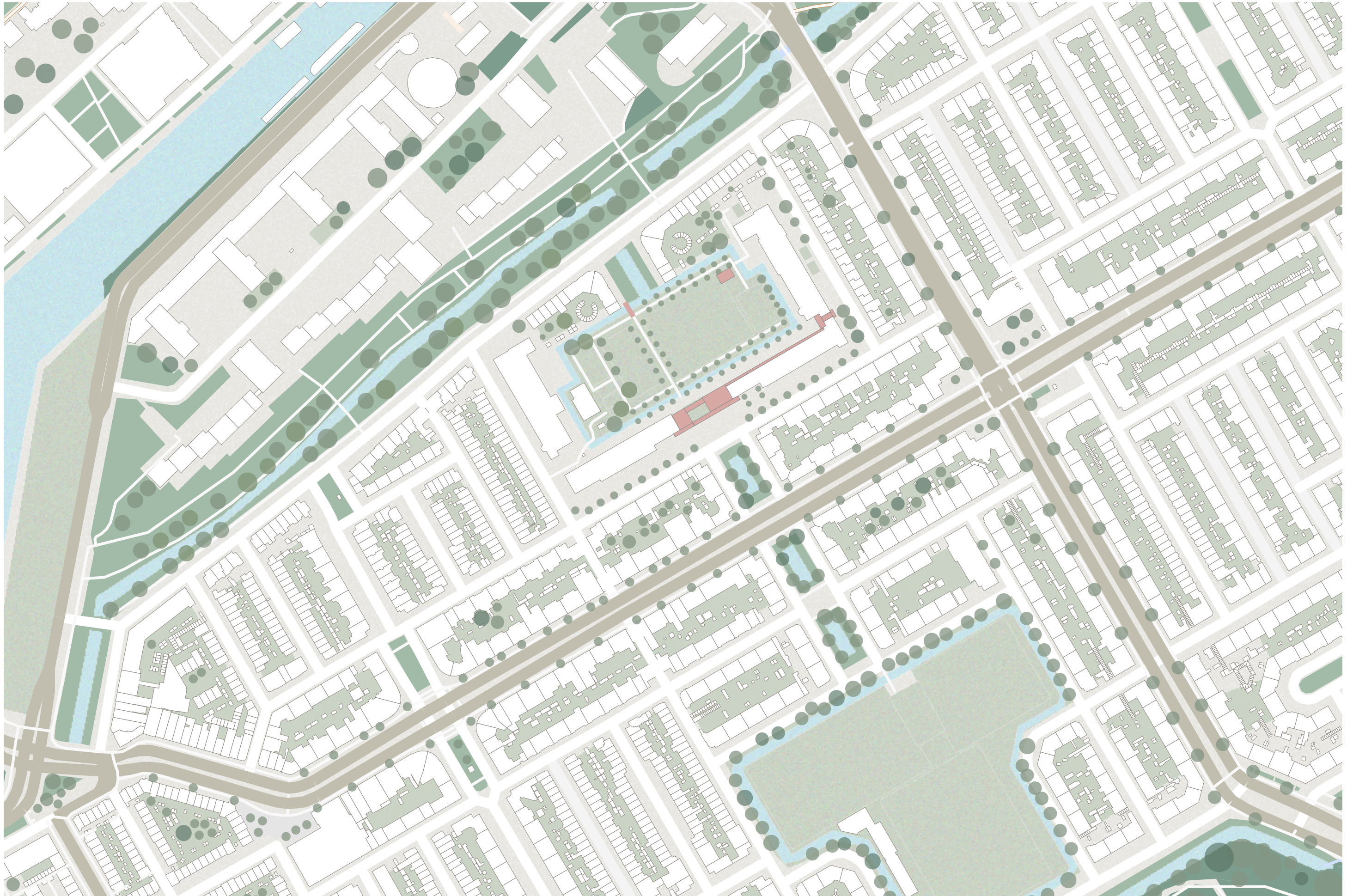


Figure 4 - Context map, scale 1:2500

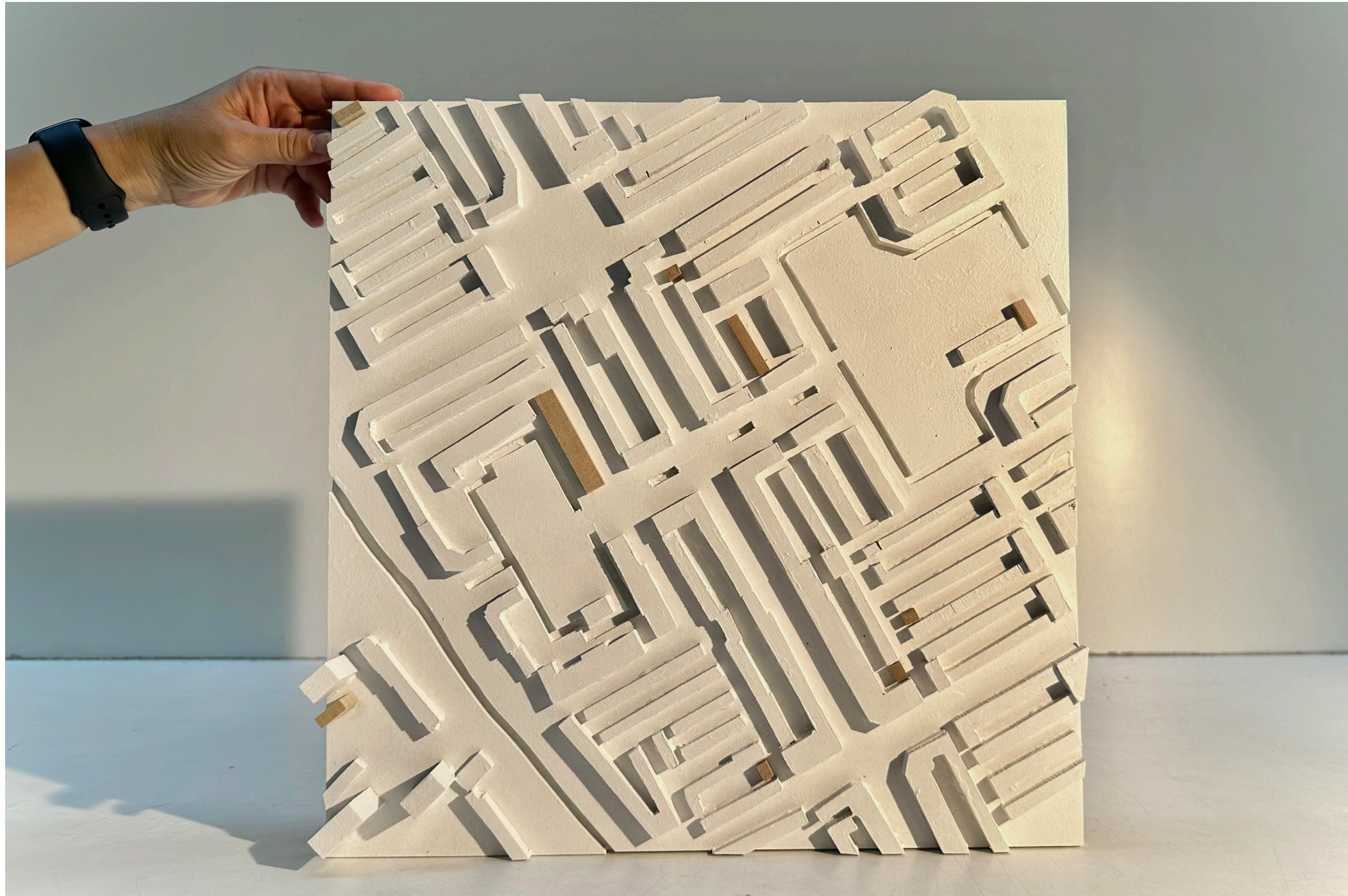


Figure 5 - Context model, scale 1:5000



Figure 6-7 - Site model, scale 1:500

Inclusive education site

Introducing YAIDD to the site

Upon closer examination of the site, it becomes apparent that the arrangement of schools creates a sense of intimacy and invites exploration of the inner green space. Drawing inspiration from the iconic vision of Petrus Berlage, which emphasizes the importance of the green fields in Laakkwartier, it is essential to preserve these areas for recreational sports. Consequently, in the proposed intervention for the site, two football fields and one basketball field are retained.

To enhance the quality of the sports fields, additional walking paths and greenery are introduced to create visual distinctions between different zones. This thoughtful delineation improves the comprehension of field usage and facilitates navigation for Young Adults with Intellectual or Developmental Disabilities (YAIDD). By clearly demarcating the different areas, it becomes easier for individuals to understand and navigate the sports fields.

The previously mentioned "gate effect" situated at the entrance to the green fields serves as an inviting space, offering visitors a serene environment adorned with greenery and shade. This space is designed to function as a terrace for a community center, thereby introducing YAIDD individuals to the wider community and promote Social Inclusion. The intention is for this area to become a vibrant hub where meaningful connections can be forged, creating a sense of belonging for YAIDD individuals within the community.

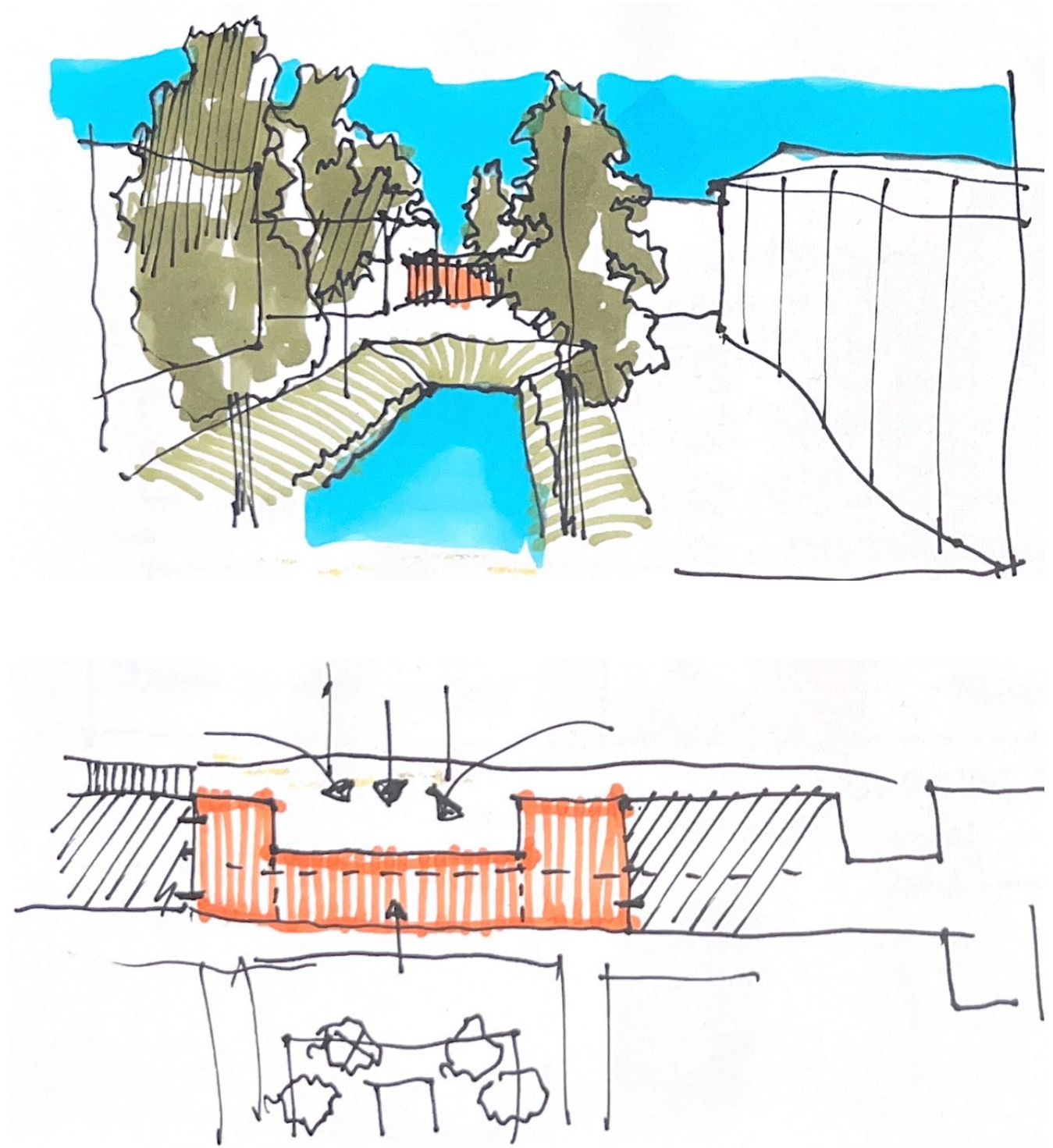


Figure 8 - Preliminary sketches, urban intervention

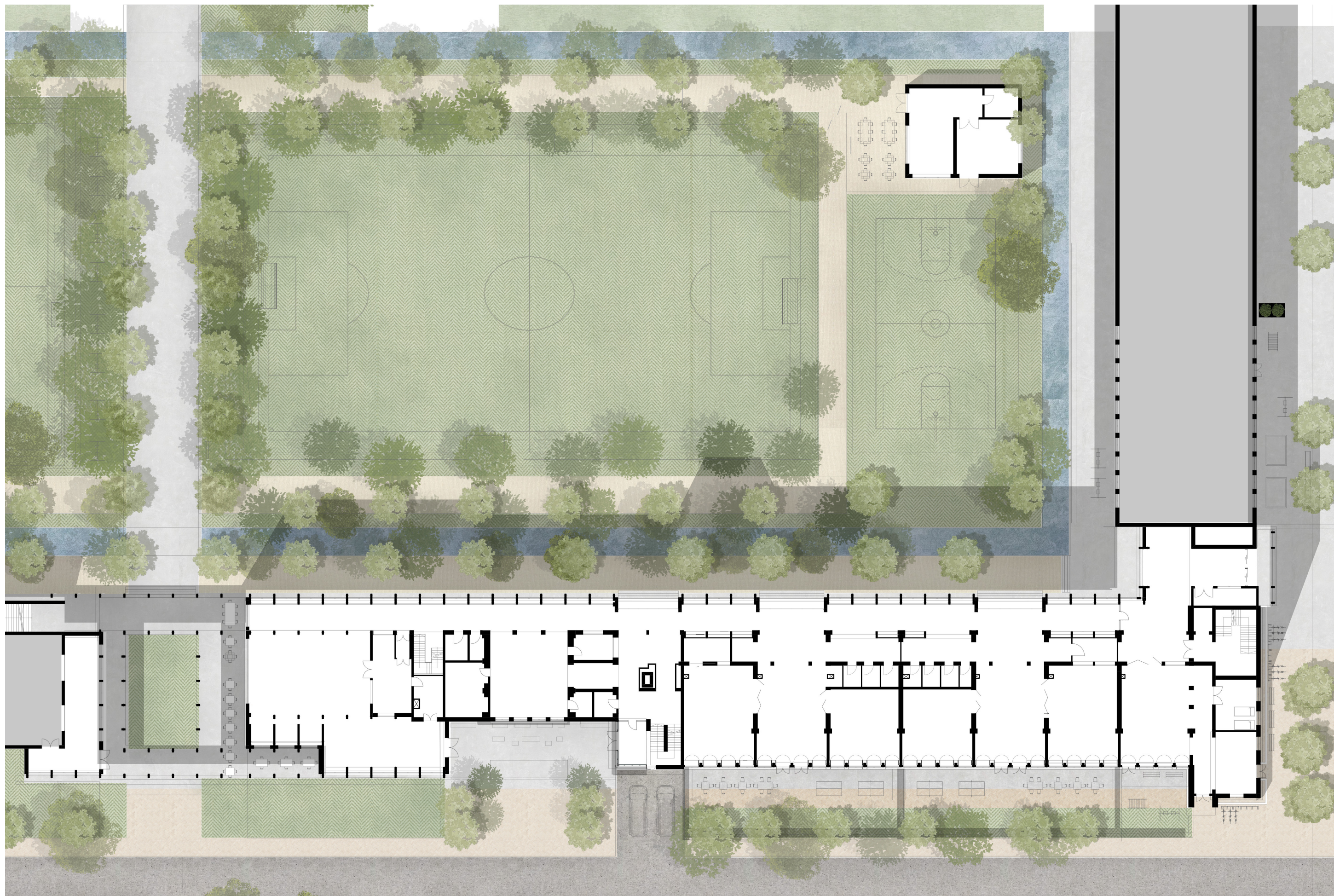


Figure 9 - Context map, scale 1:2500

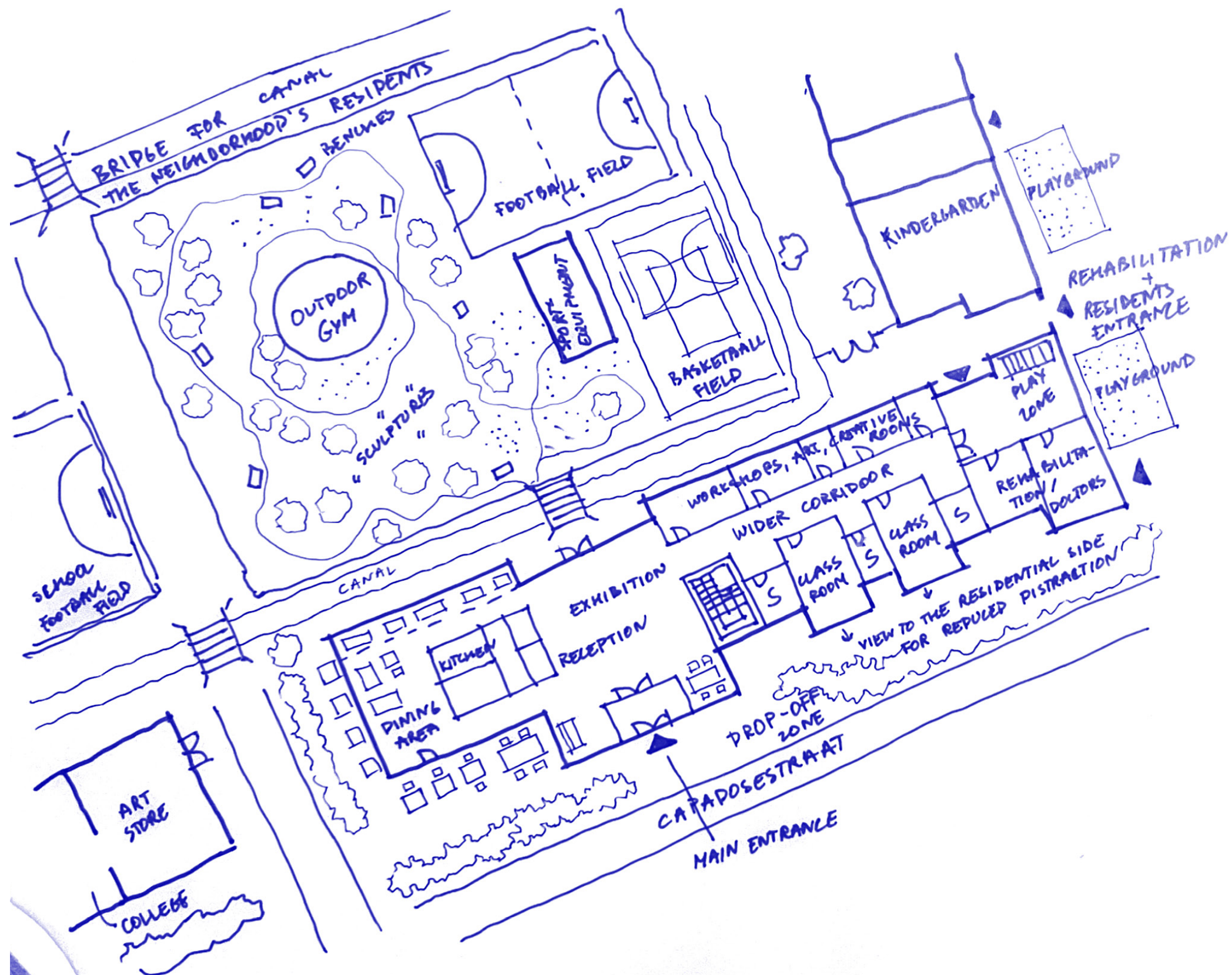


Figure 10 - Exploring the potentials of the site through sketches

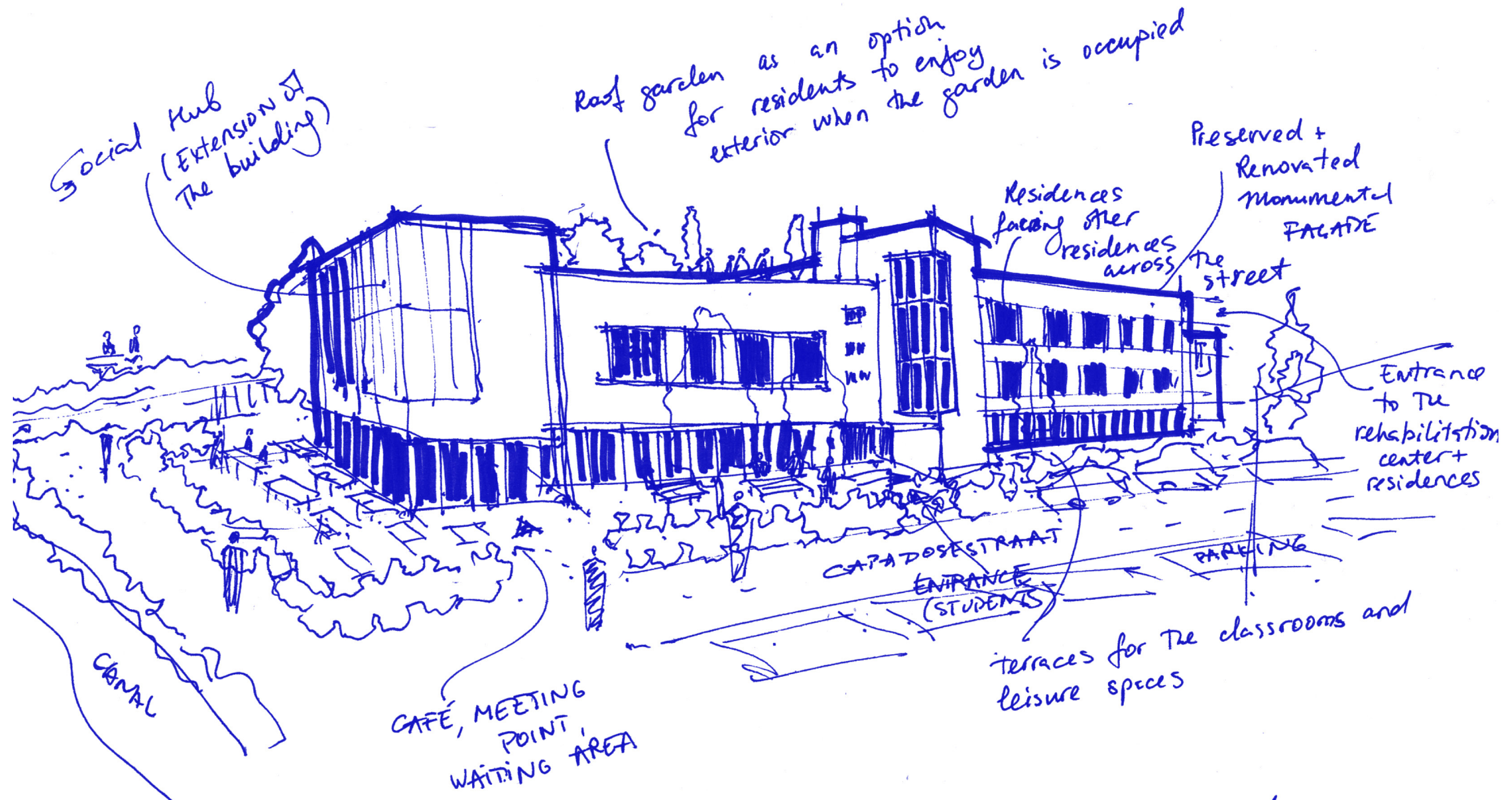


Figure 11 - Ideas for community integration strategies

The new program

Introducing YAIDD to the site

The primary objective of building transformation is to implement the functions derived from the research supporting this Master thesis, aiming to introduce Independence, Social participation, and Well-being to the new users of Capadosestraat 9. The key functions encompass classrooms, a community center area, a shared kitchen and laundry facility, short-stay apartments, and a physiotherapy space.

To accommodate these functions, the existing building was extended with an additional structure constructed with glulam columns and beams. This new volume not only caters to the required programmatic needs but also influences the urban qualities of the space, leading to the formation of a promenade along the back facade.

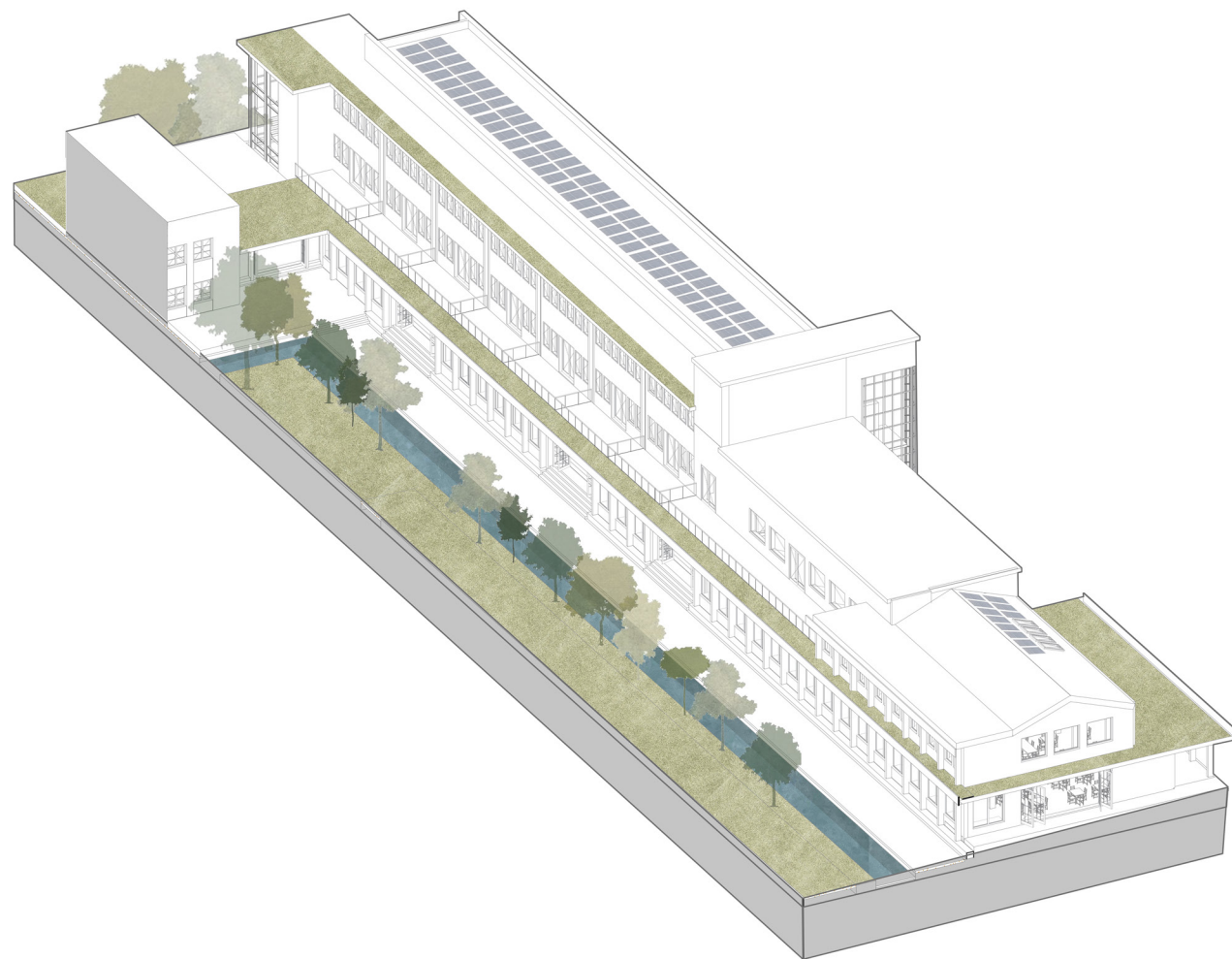


Figure 12 - New volume and its' relation to the green and blue infrastructure

The distribution of functions follows the following pattern - the ground floor is primarily dedicated to public functions, encouraging engagement with the new promenade. As we move to the upper floors, privacy levels increase, with the first and second floors specifically designed for the residents. The community center, positioned at the former inactive facade of the building, serves as the gateway to the promenade and the adjacent sports field. This extension is intended to benefit the neighborhood, residents, and student, fostering a sense of inclusivity and communal interaction.

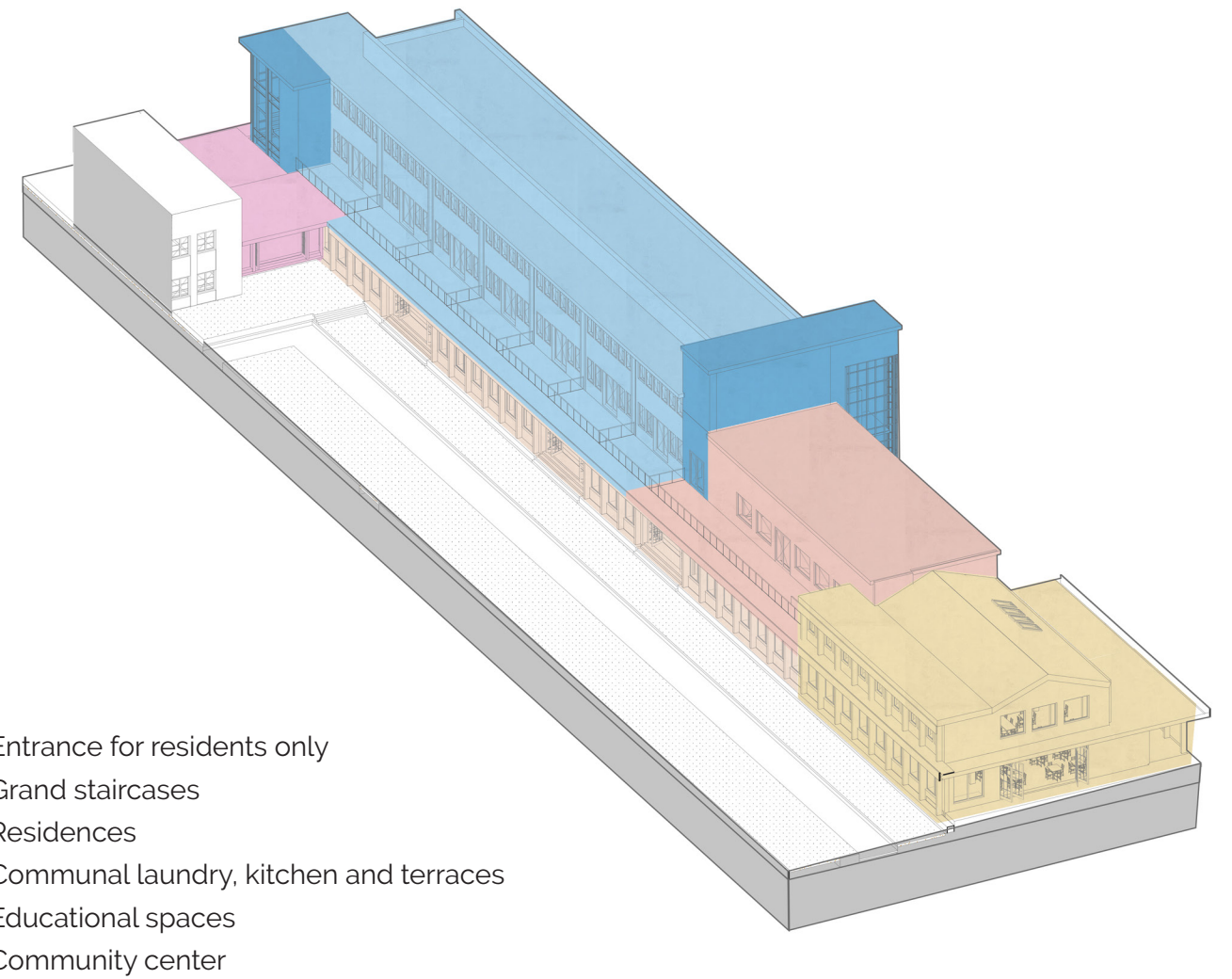
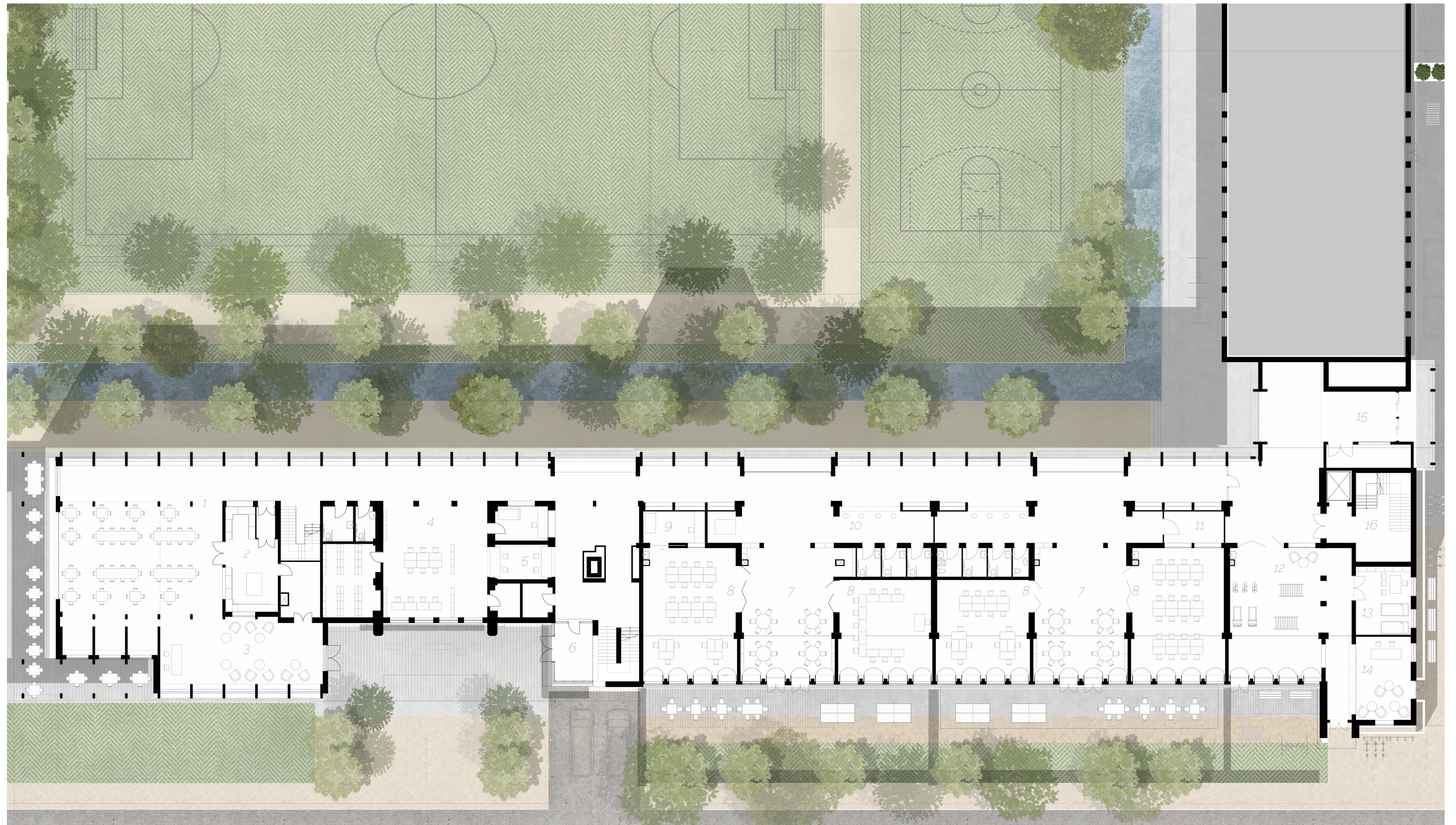


Figure 13 - New volume and its' composition of functions



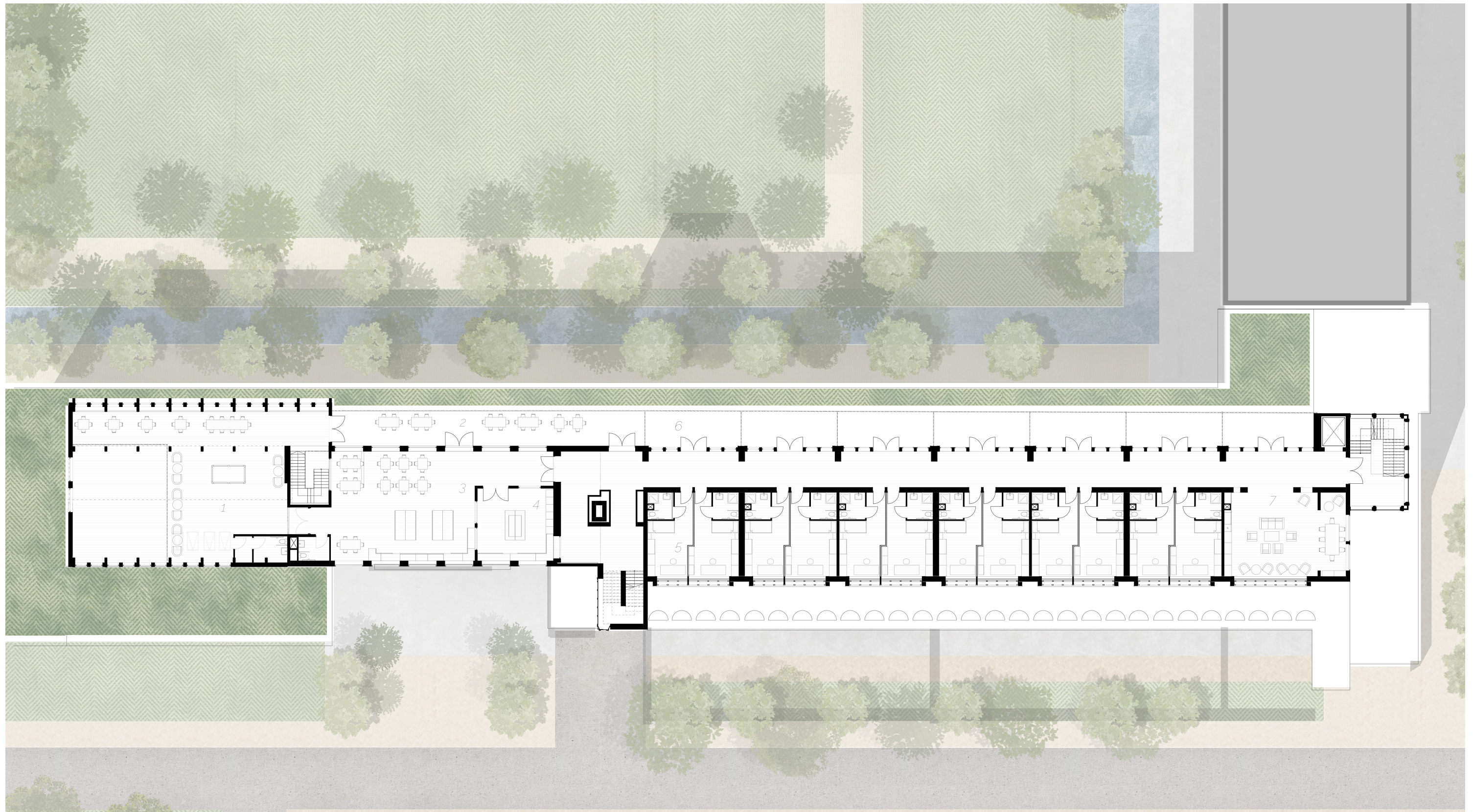
- 1 - Community center
- 2 - Community kitchen
- 3 - Reception desk (visitors)
- 4 - Library and working area
- 5 - Student Service desk

- 6 - Entrance for students
- 7 - Leisure rooms as "home-bases"
- 8 - Classrooms (two classrooms sharing one home-base)
- 9 - Individual study room

- 10 - Informal study area
- 11 - Snoezle room
- 12 - Physiotherapy gym
- 13 - Doctor's office
- 14 - Physiotherapy reception

- 15 - Residents' entrance (with bike storage and post boxes)
- 16 - Residents' only elevator and stairs

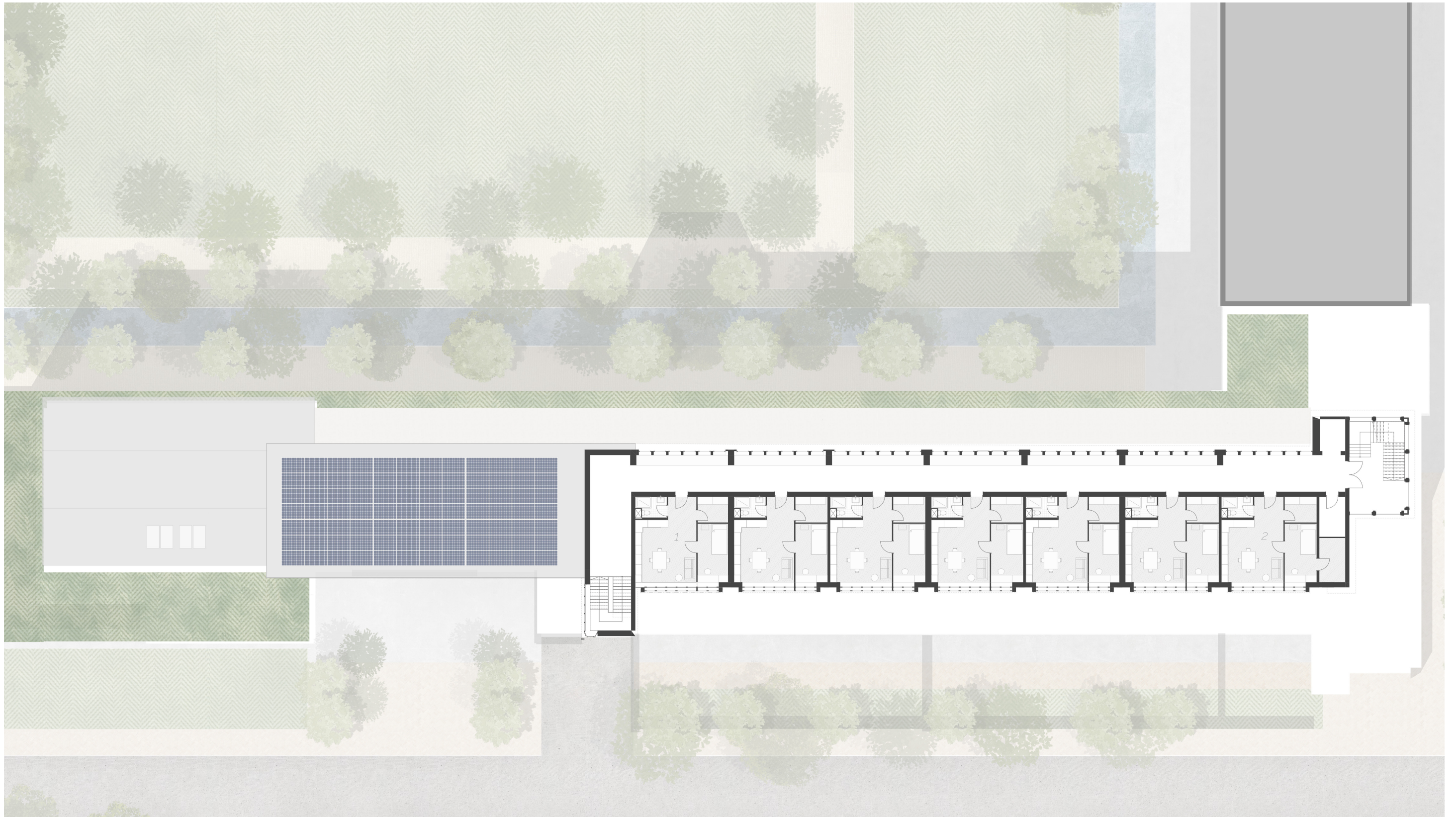
Figure 14 - Ground floor, scale 1:300



- 1 - Leisure room for residents overlooking community center
- 2 - Communal balcony for the residents
- 3 - Communal kitchen
- 4 - Shared laundry

- 5 - Basic studio, 24,5 m2
- 6 - Balcony shared among the two neighboring residents
- 7 - Communal living room

Figure 15 - First floor, scale 1:300



1 - Apartment typology for singles and couples, 49 m²

2 - Special typology with an extra room for snoezle

Figure 16 - Second floor, scale 1:300

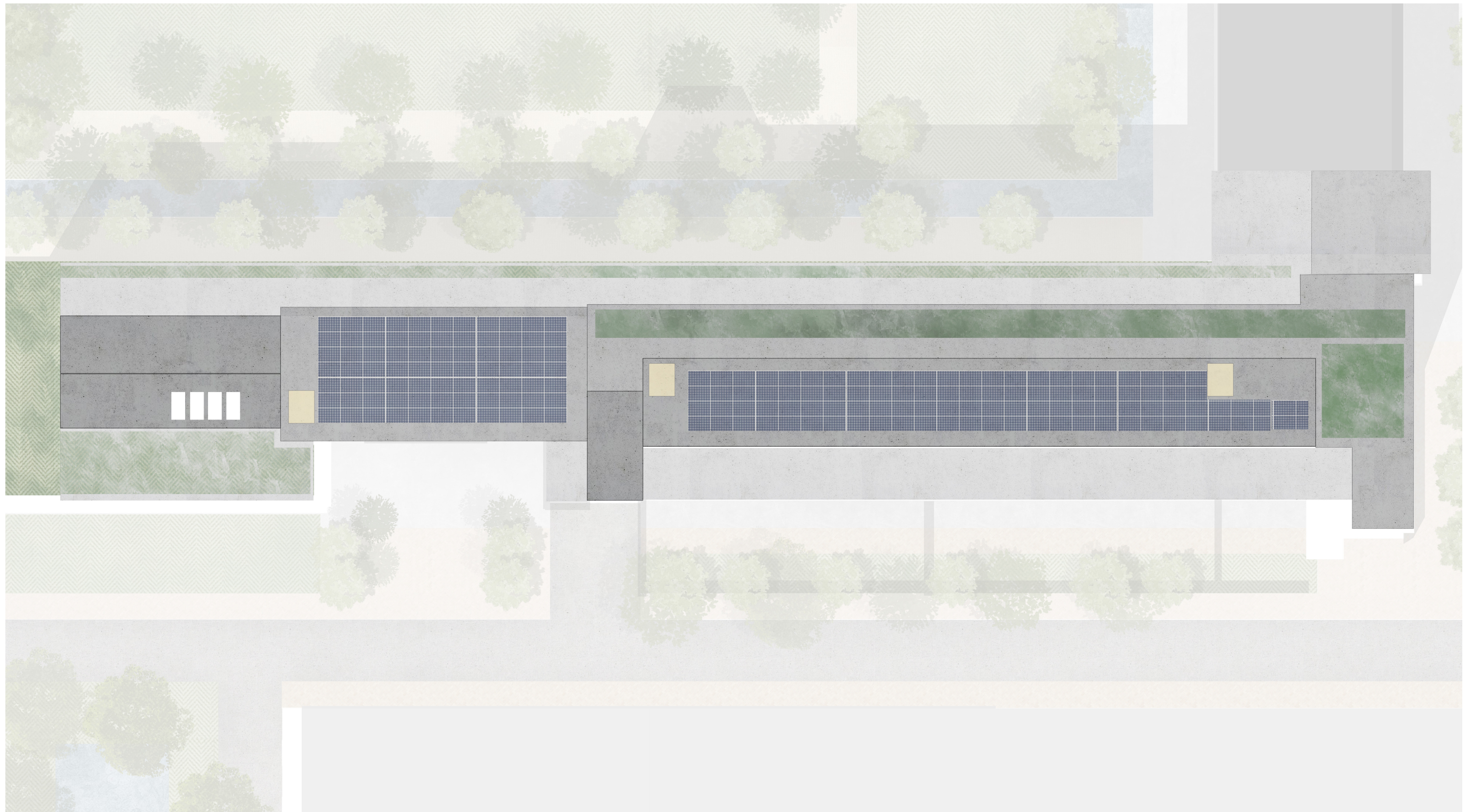


Figure 17 - Roof plan with roof installations, scale 1:300

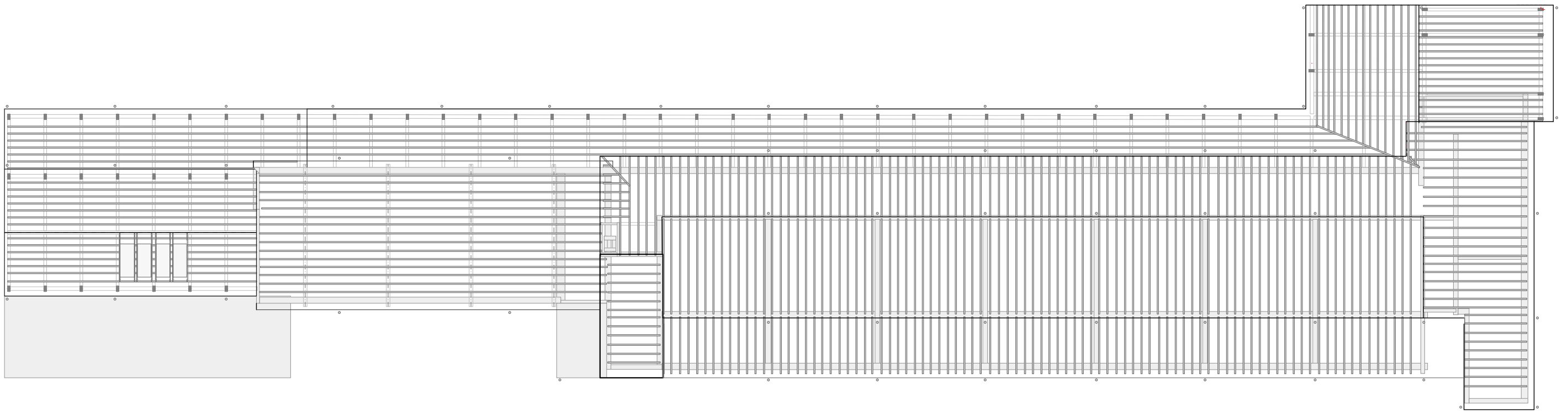
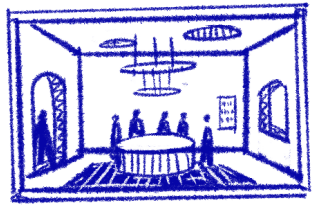


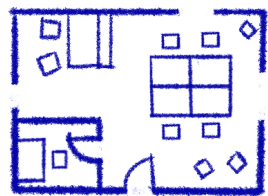
Figure 18 - Structural roof plan, scale 1:300



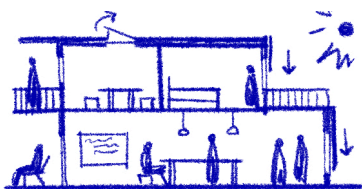
To avoid repetitiveness special character can be assigned to each classroom with color and layout.



Previewing classrooms through windows and glass doors. Alcove seats for refuge.



Classroom layouts should accommodate spots for group work and individual work stations.



Natural ventilation and natural daylight to increase productivity and reduce noise disturbances.

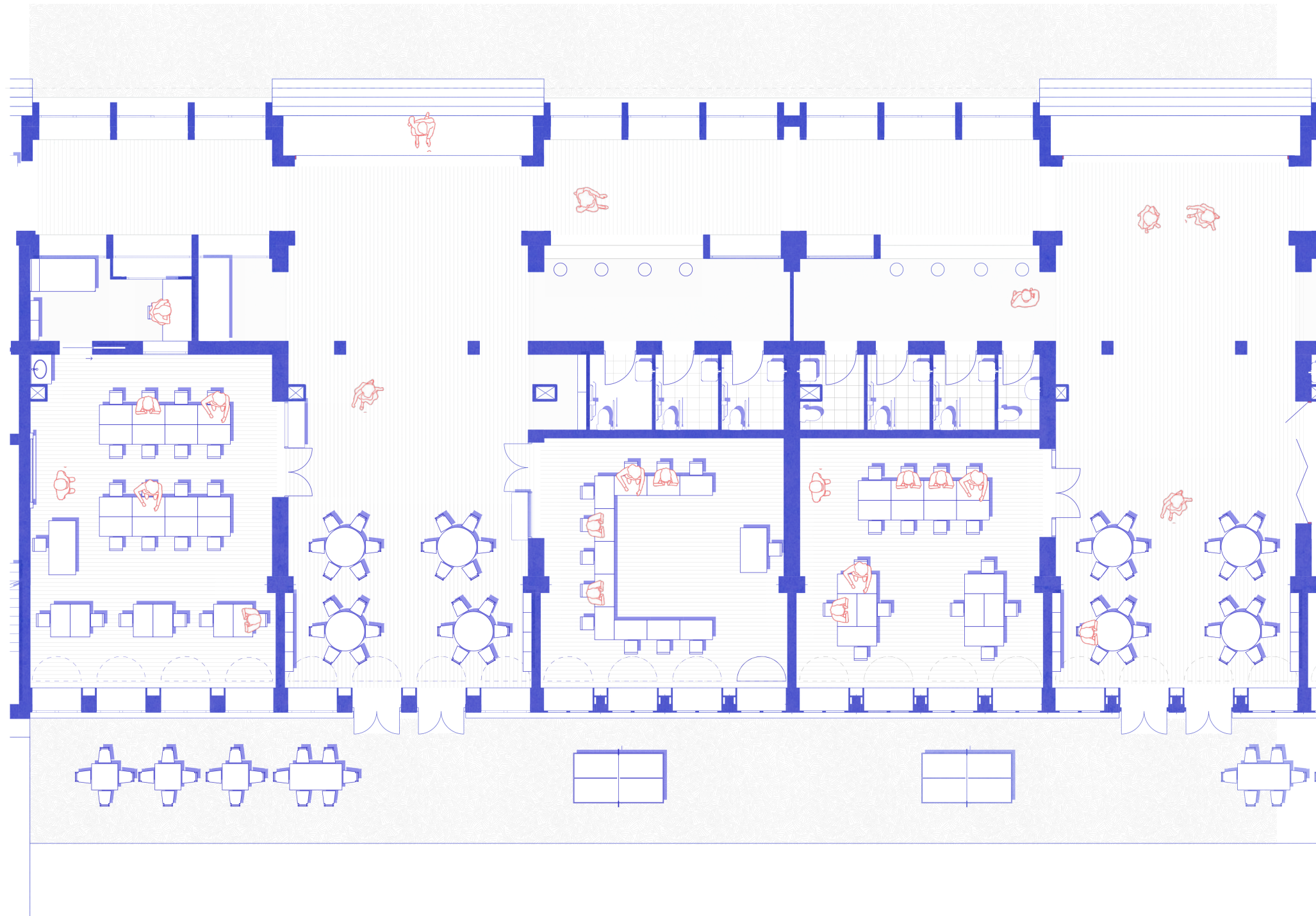


Figure 19 - Education center, zoomed-in plan and design concepts (Ground floor)

The education cluster design follows the homeroom-based approach, where two classrooms share one leisure room placed in-between. The classrooms were designed with a strategic emphasis on providing a preview of the rooms before entering. This design strategy aims to create a sense of anticipation and engagement, while also allowing individuals to familiarize themselves with the environment prior to fully entering the classroom. Moreover, the layout of the classrooms accommodates both collaborative group work and individual settings, promoting various learning styles and preferences.



Within the classrooms, the spatial layout is strategically divided into distinct zones: an active and engaging studying area, juxtaposed with a tranquil and de-stimulating seating area. Using the existing architectural niches of the original building, tranquil bay-window seats are integrated, offering a unique ambiance with views of the front garden. This design intervention creates a serene spot within the classroom, providing students with a quieter environment to complete their study tasks, take a break, or engage in reading.

Figure 20 - Collage: inside the classroom

To ensure a harmonious integration and prevent the emergence of dark corners or high contrasts between the main classroom space and the bay-seats, half-a-circle-shaped skylights are strategically incorporated. These carefully positioned skylights serve as a source of natural illumination, gently diffusing daylight into the space, and creating a balanced and visually cohesive environment.



Figure 21 - Collage: bay-window seats in the education cluster



The home-bases, consisting of a leisure room that connects the two classrooms, provide a dedicated space for students to freely interact with one another. This concept is rooted in the belief that learning should extend beyond the traditional classroom settings, emphasizing the importance of social interaction and engagement. As such, this versatile area can be utilized as a lunch space during breaks between lectures, a study room, or an activity zone where students can explore various educational and recreational pursuits. By offering a multi-functional environment, the design encourages dynamic and collaborative learning experiences, promoting a vibrant educational atmosphere.

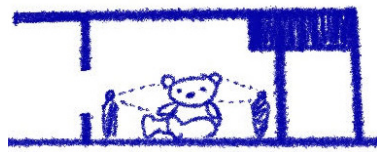
Figure 22 - Collage: "Home-base" leisure room



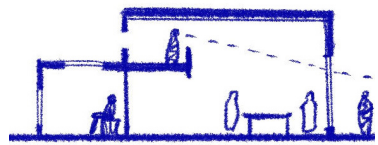
Figure 23 - Education cluster: fragment model 1:35 (front facade view)



Figure 24-25 - Education cluster fragment: zoomed-in photographs of the front facade (left) and a classroom (right)



Landmarks inside the building through smell, sculpture, color, scale.



Preview through side openings, balconies or glass doors.



Options of individual and group seatings in public areas.



Sound-absorbing ceiling and wall panels, rugs and cork boards to reduce noise.

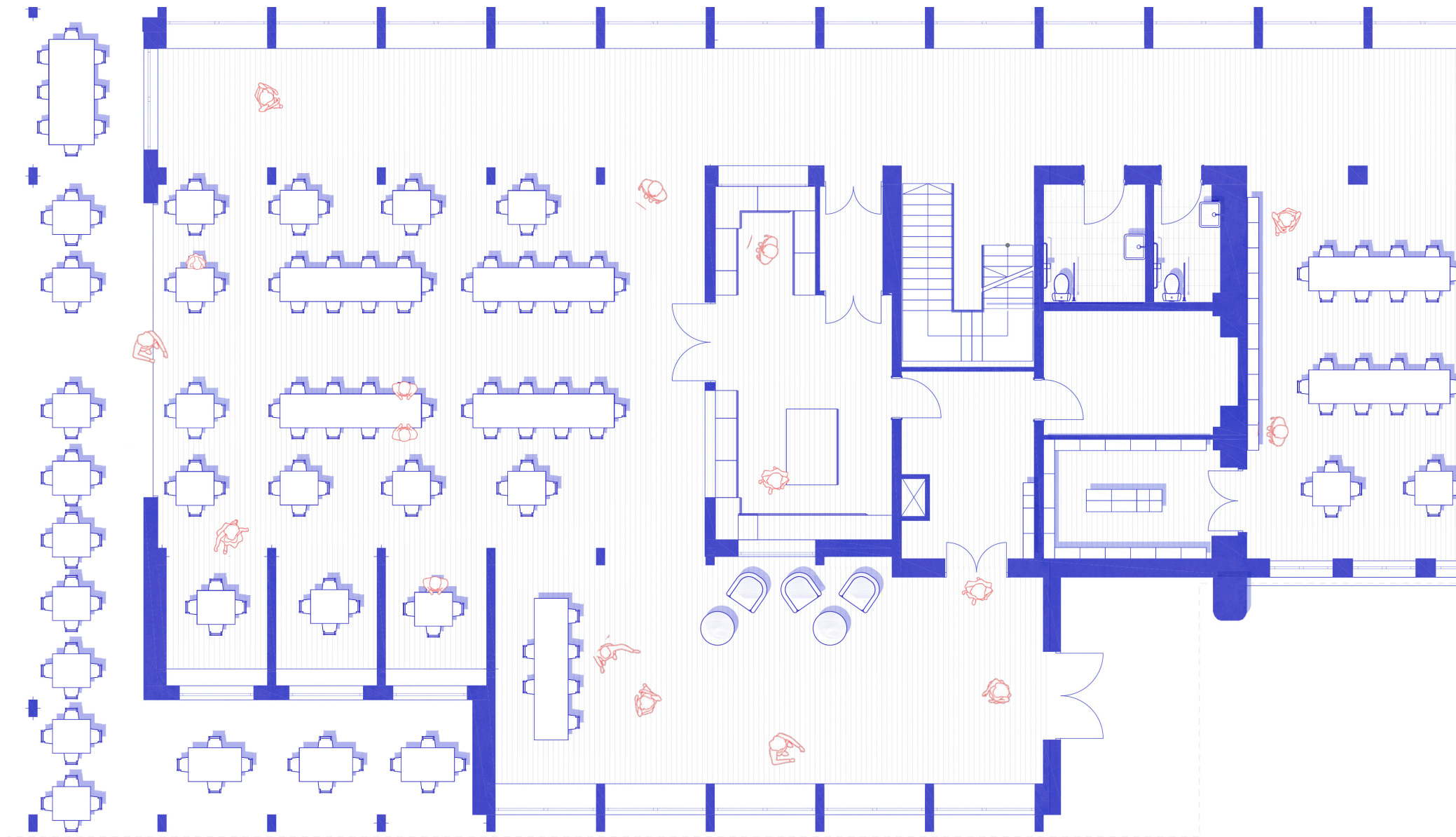


Figure 26 - Community center, zoomed-in plan and design concepts (Ground floor)

Designed with a thoughtful layout, the community center encompasses features such as a reception desk, a prominently displayed restaurant kitchen operated by employees with IDD, and easily accessible storage space. Whether choosing to socialize in group settings or seeking individual spaces, the center accommodates various seating arrangements. Recognizing that certain user groups may desire a more secluded atmosphere while still being able to observe social activities, special niches are strategically positioned along the main dining hall. These niches provide secluded spots where individuals can maintain a sense of privacy while still enjoying the ambiance and energy of the communal space. Overall, community center aims to foster inclusivity, encourage social engagement, and provide a welcoming environment for both YAIDD individuals and the broader community to interact and connect.



The library, connecting the educational functions and a community center offers visitors a space for activities such as reading books and magazines, accessing printing and copying services, or utilizing additional work and study space.

Figure 27 - Collage: Library as seen from the corridor

The main hall of the community center is designed with a double height, strategically enhancing social interactions by offering abundant space and daylight. Together, space and light create a welcoming atmosphere, facilitating a sense of openness and connectivity. A noise-absorbing timber-slat ceiling design minimizes noise levels within the hall, ensuring a more comfortable and conducive environment for individuals who are sensitive to auditory stimuli.



Figure 28 - Collage: Community center's main dining hall



The entrance to the sport fields is designed to create a "gate effect", enveloped by a lush green square. This deliberate framing of the entrance enhances the overall aesthetic appeal while providing a sense of transition for the visitors. At the heart of the sports fields, the central field serves as a versatile space that can be transformed into a vibrant vegetation spot, an inviting area for picnics, casual seating arrangements, or even open-air street performances. This multi-functional approach ensures that the central field becomes a dynamic focal point.

Figure 29 - Collage: Green square at the entrance to the sport fields



Sound-absorbing ceiling and wall panels, rugs and cork boards to reduce noise.



Options of individual and group seatings in public areas.

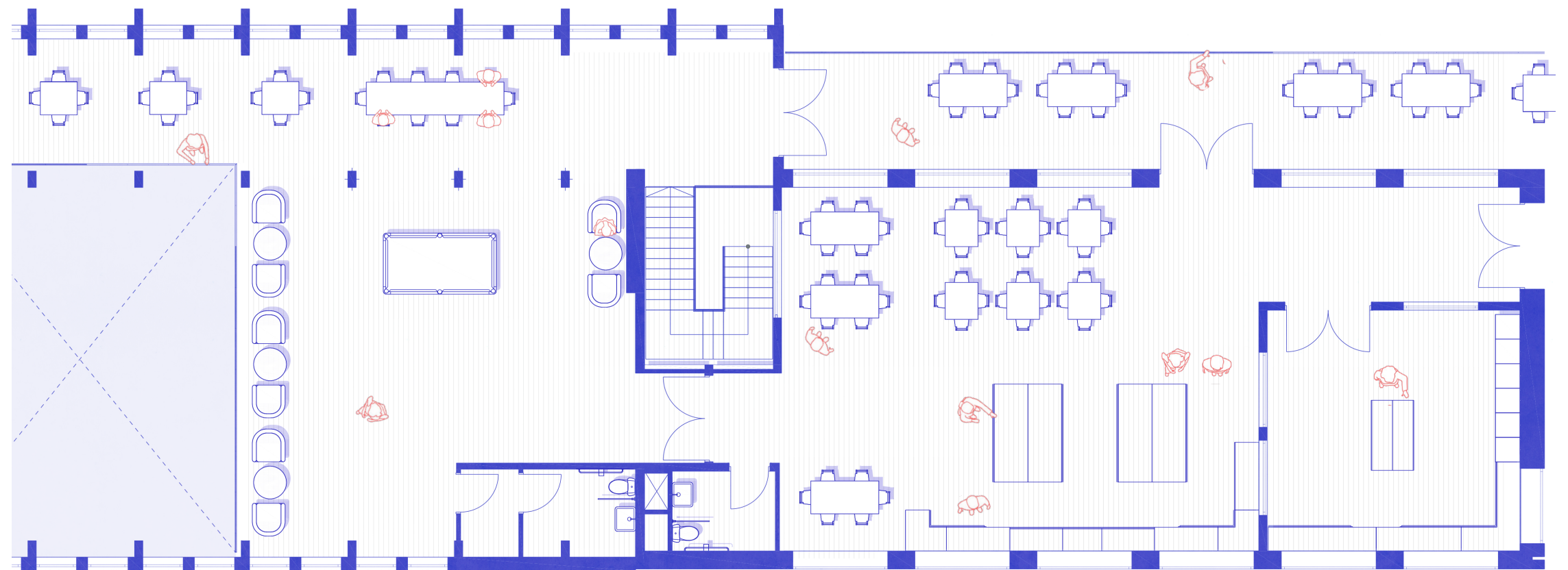
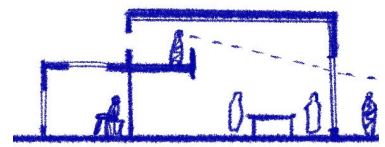
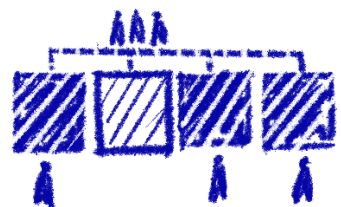


Figure 30 - Shared facilities for the residents, zoomed-in plan and design concepts for shared kitchen, laundry and leisure zones (First floor)



Preview through side openings, balconies or glass doors.



Accessibility of residences within the reach from shared facilities for immediate refuge

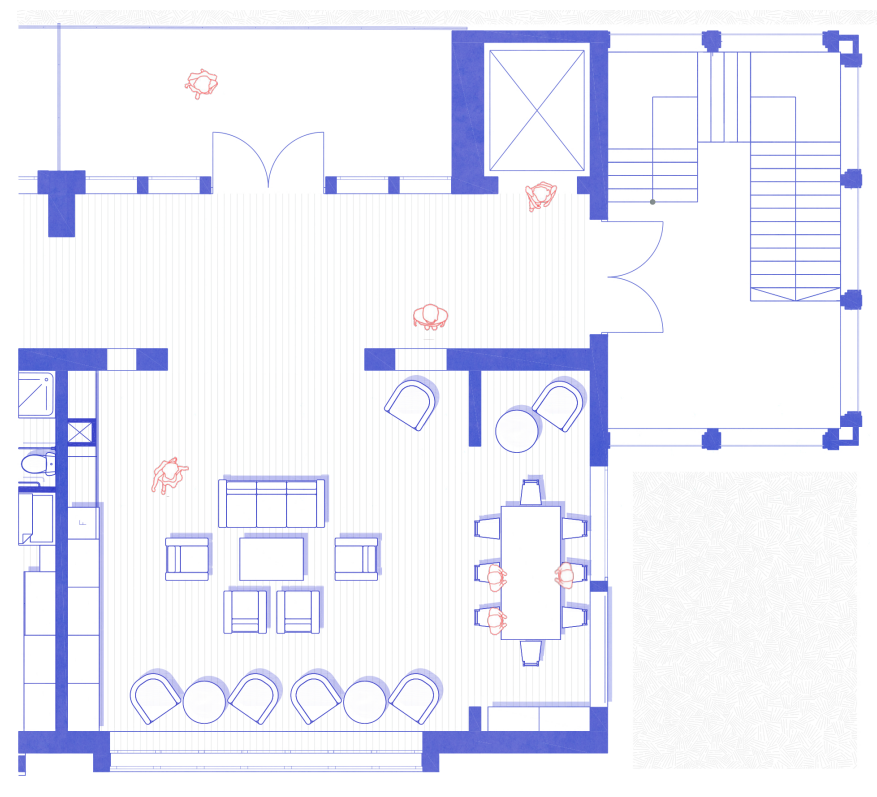


Figure 31 - Shared facilities for the residents, zoomed-in plan and design concepts for the shared living room (First floor)

To optimize space utilization on the First floor, shared amenities are provided for the residents of the smallest residential typology, the 24.5 m² studios. This design approach marks a significant step towards fostering autonomy and independent living for YAIDD individuals. Within these shared amenities, residents have the opportunity to participate in workshops and oversee activities they wish to learn and engage in. One of these shared amenities is the laundry room, where YAIDD individuals can familiarize themselves with laundry sorting, proper use of dryers and washing machines, as well as ironing techniques. Abundant working surfaces are provided to facilitate practical learning experiences in a supportive environment. Similarly, the shared kitchen serves as a space for cooking workshops, enabling YAIDD individuals to acquire essential skills in healthy meal preparation. Overlooking the community center, the leisure room grants residents the agency to choose whether they prefer to join the public space or remain in the residents-only zone. This flexibility provides a sense of control and autonomy, empowering residents to determine their desired level of social engagement.



The shared kitchen area is designed to provide a connection with the adjacent laundry room through previewing windows. This architectural feature allows residents to have a glimpse of the ongoing workshops. In addition to its primary functions of cooking and eating, the shared kitchen area accommodates a range of activities. It serves as a versatile space where residents can gather to play board games, fostering social interaction and recreational pursuits. Moreover, the area provides room for informal meetings and parties,

Figure 32 - Collage: Shared kitchen view

The laundry room is designed to explain and support an independent use of a washing machine and dryer to YAIDD. Hence, display tables, posters and previewing windows serve as the elements that support the learning process.



Figure 33 - Collage: Laundry room



The living room design features a division of space into a main area and a dining niche, utilizing the original building's layout to create openings in former walls. This design approach allows residents to enjoy a tranquil environment while overlooking the entire room and maintaining their own personal zone. By seamlessly integrating these openings, the design achieves a harmonious balance between individual and communal spaces.

Figure 34 - Collage: Living room

The corridor connecting the main public function of the Ground floor became the inner street, where visitors can take a seat to relax and read a book, have a conversation, sit at the sit-stand desk to study, and oversee the common areas before entering the public spaces.



Figure 35 - Collage: new corridor as an engaging inner street

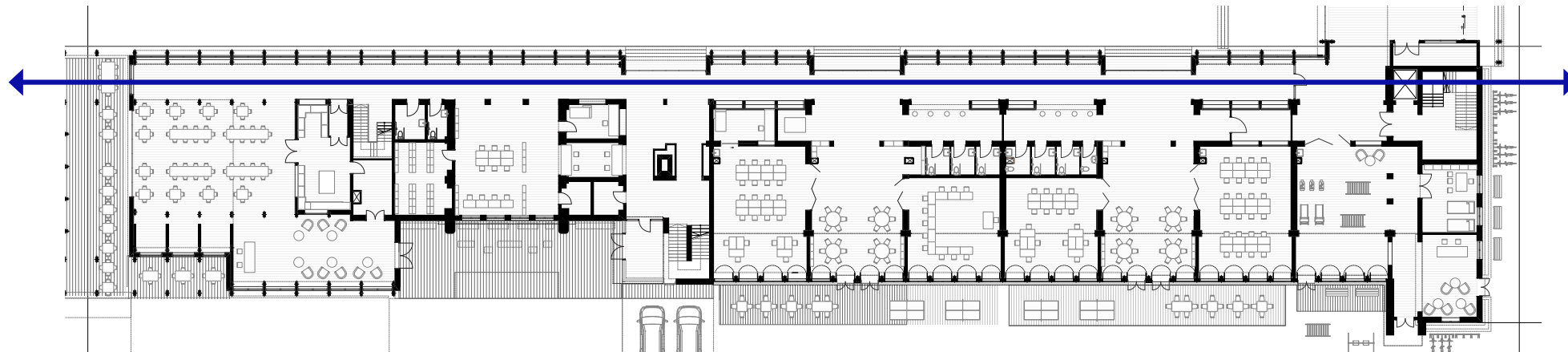




Figure 36 - Corridor view (physical model), scale 1:35



Figure 37-38 - Corridor view (physical model), scale 1:35



Figure 39 - Building section, scale 1:300



The longitudinal section reveals the progressive transitional development of facility users, with different levels of autonomy practiced on each floor. The Ground floor serves as the entry level, where visitors can learn essential skills. Moving up to the First and Second floors, the focus shifts towards applying and practicing autonomous living skills. Finally, the top floor signifies the highest level of readiness, representing the stage where YAIDD individuals are prepared to transition to their own independent living arrangements.

Materiality of the building facades

Brick - wood juxtaposition



Figure 40 - North facade (back), scale 1:200



Figure 42 - West facade (Community center view), scale 1:200



Figure 43 - South facade (front / monumental), scale 1:200



Figure 41 - East facade (Residential entry), scale 1:200



The front facade of the building has been preserved as required by the city council, while a cautious extension at the back facade complements the existing structure with a matching wood finish. The community center features a distinctive pitched roof, symbolizing a welcoming and homely environment. A new entrance for residents is strategically positioned between the kindergarten and development hub, with a visible staircase.



Figure 44 - Sketch model of the building fragment (Front facade), scale 1:50



Figure 45 - 46 - Sketch model of the building fragment (Back facade), scale 1:50

Strategies for building transformation

Dealing with an existing building

The combination drawing of the protected facade reveals that the exterior view has been fully preserved, with minimal interventions limited to additional insulation and a skylight incorporated in the section. In contrast, the back facade features an extension constructed with a glulam column and beam structure, along with a timber stud facade. This extension serves multiple purposes, including the creation of a new inner street on the ground floor and balconies for the first-floor residents. The inclusion of planters above the extension offers an opportunity for residents to engage in watering the plants, enhancing the ambiance of domesticity and control.

The community center space follows a similar approach, where the placement of load-bearing glulam columns defines the zoning of corridors, dining areas, and reception zones. All load-bearing elements were relocated inside the building's envelope, with additional non-load-bearing timber columns positioned outside. This strategic adjustment ensures optimal thermal efficiency while maintaining the desired structural integrity and functionality of the community center.

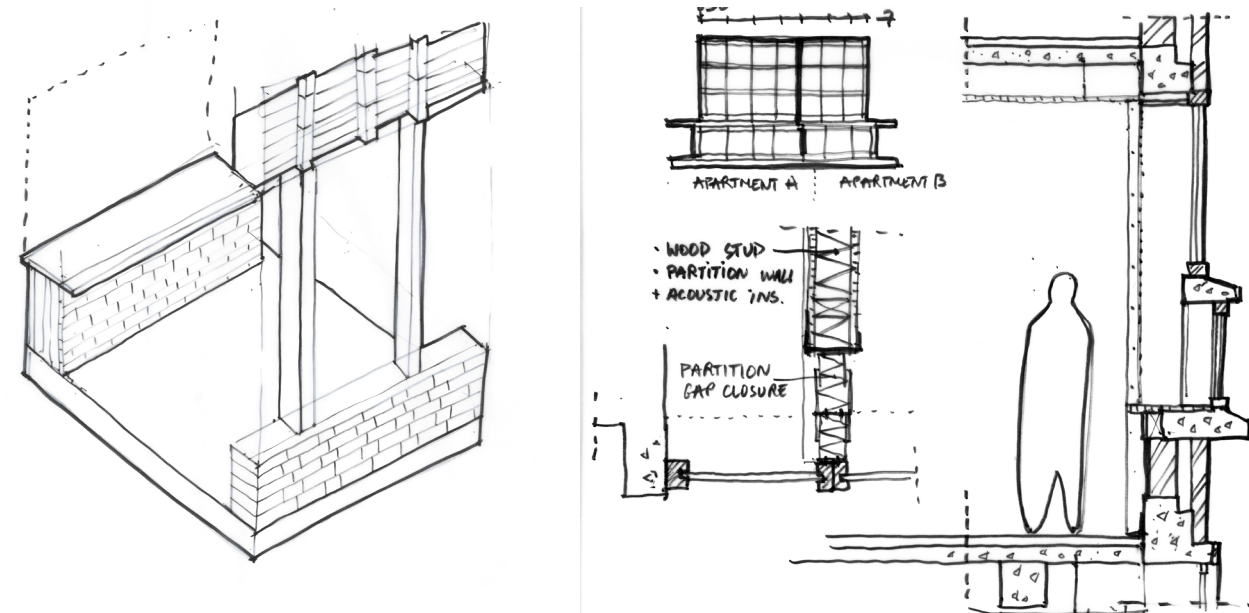
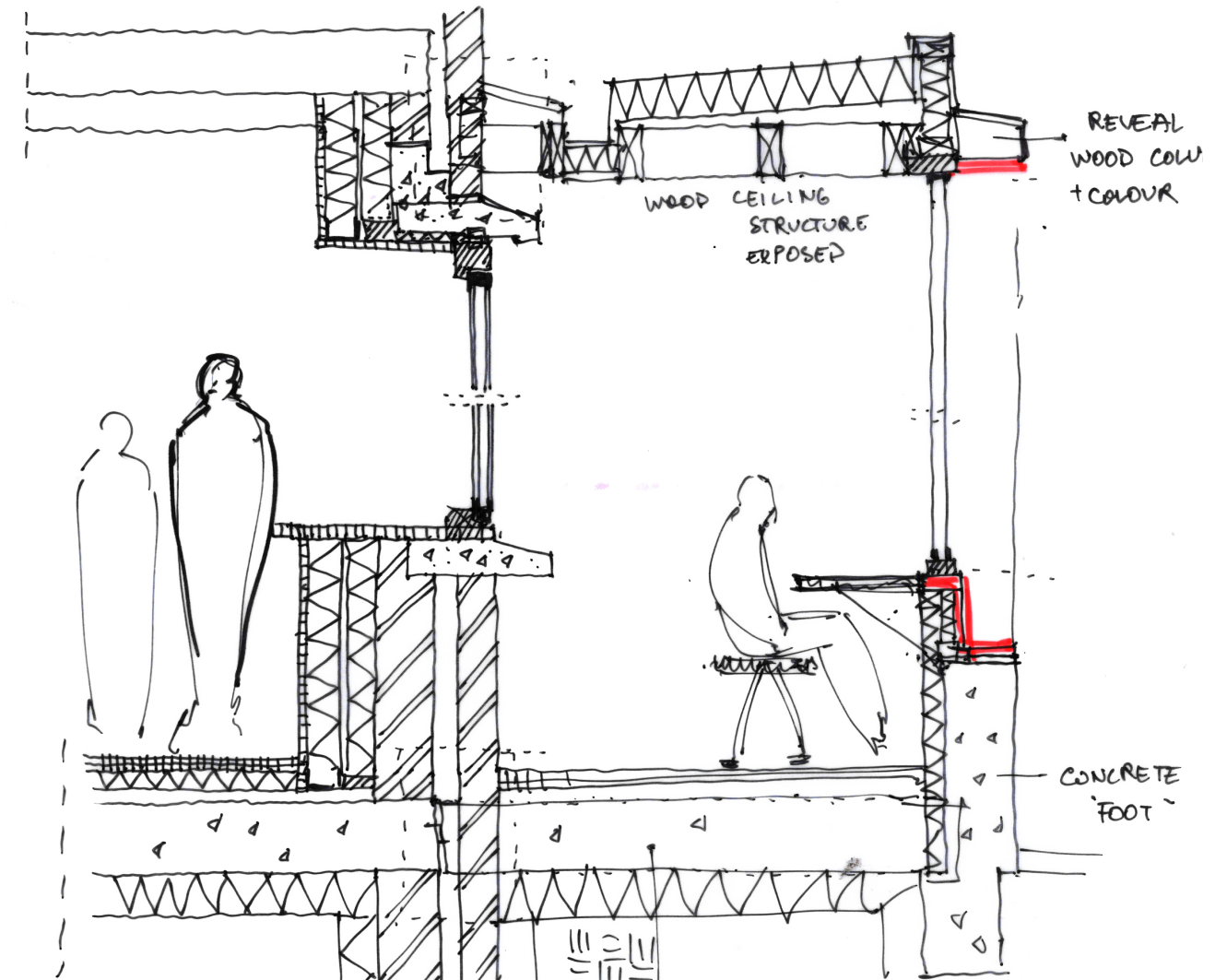
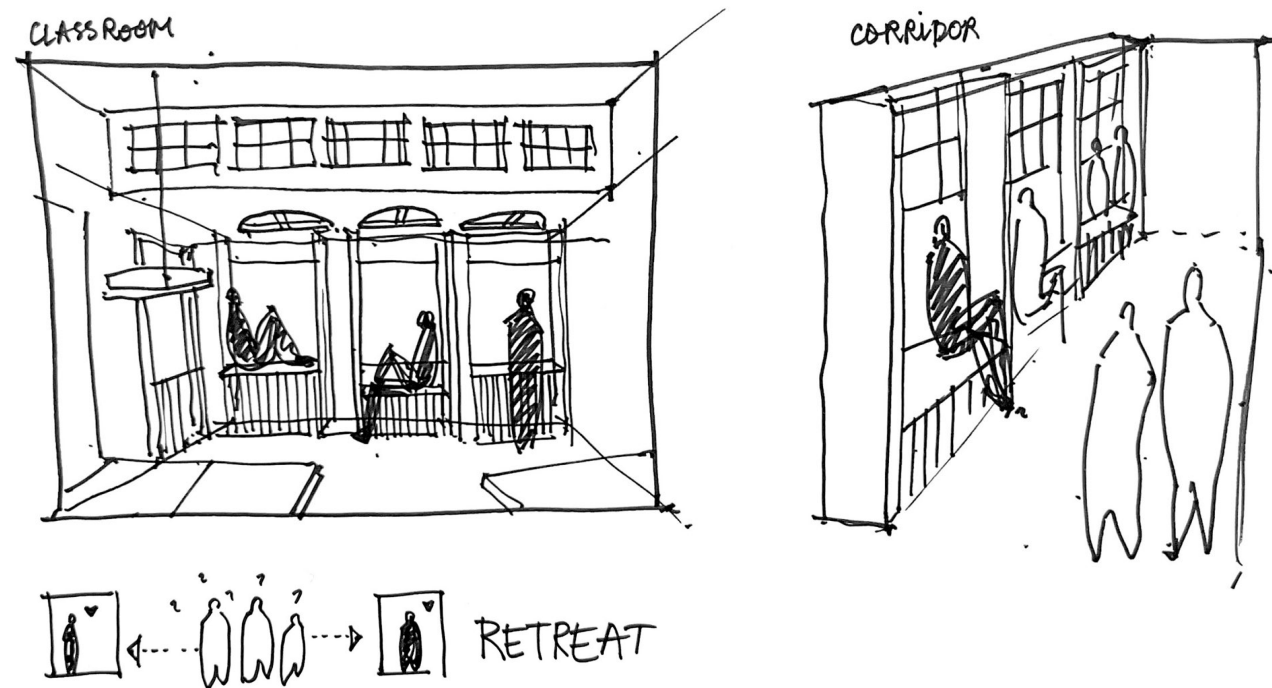


Figure 47 - Preliminary hand sketches while brainstorming Building Technology strategies for transformation

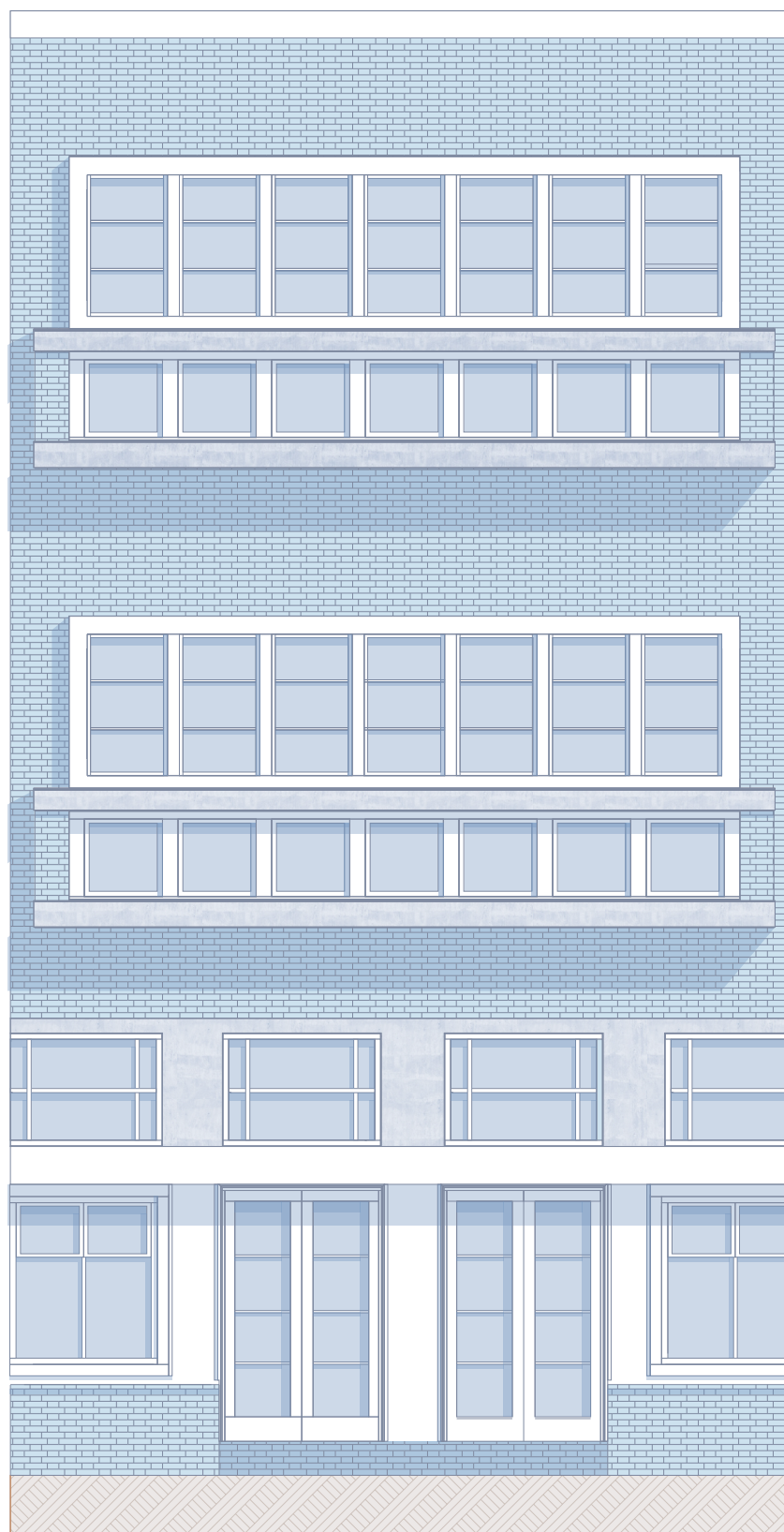


Figure 48 - Front (protected) facade versus back (new) facade, modified scale

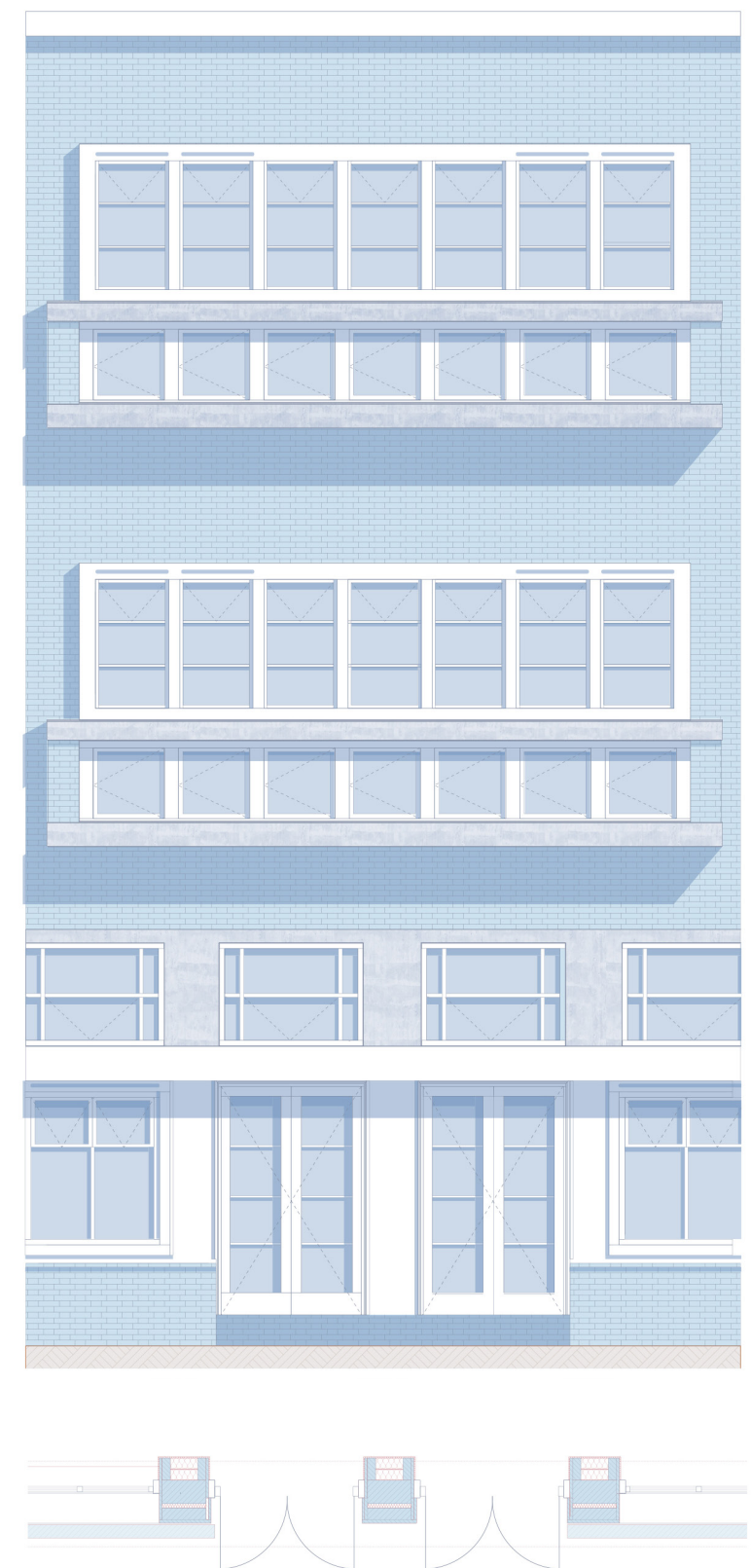
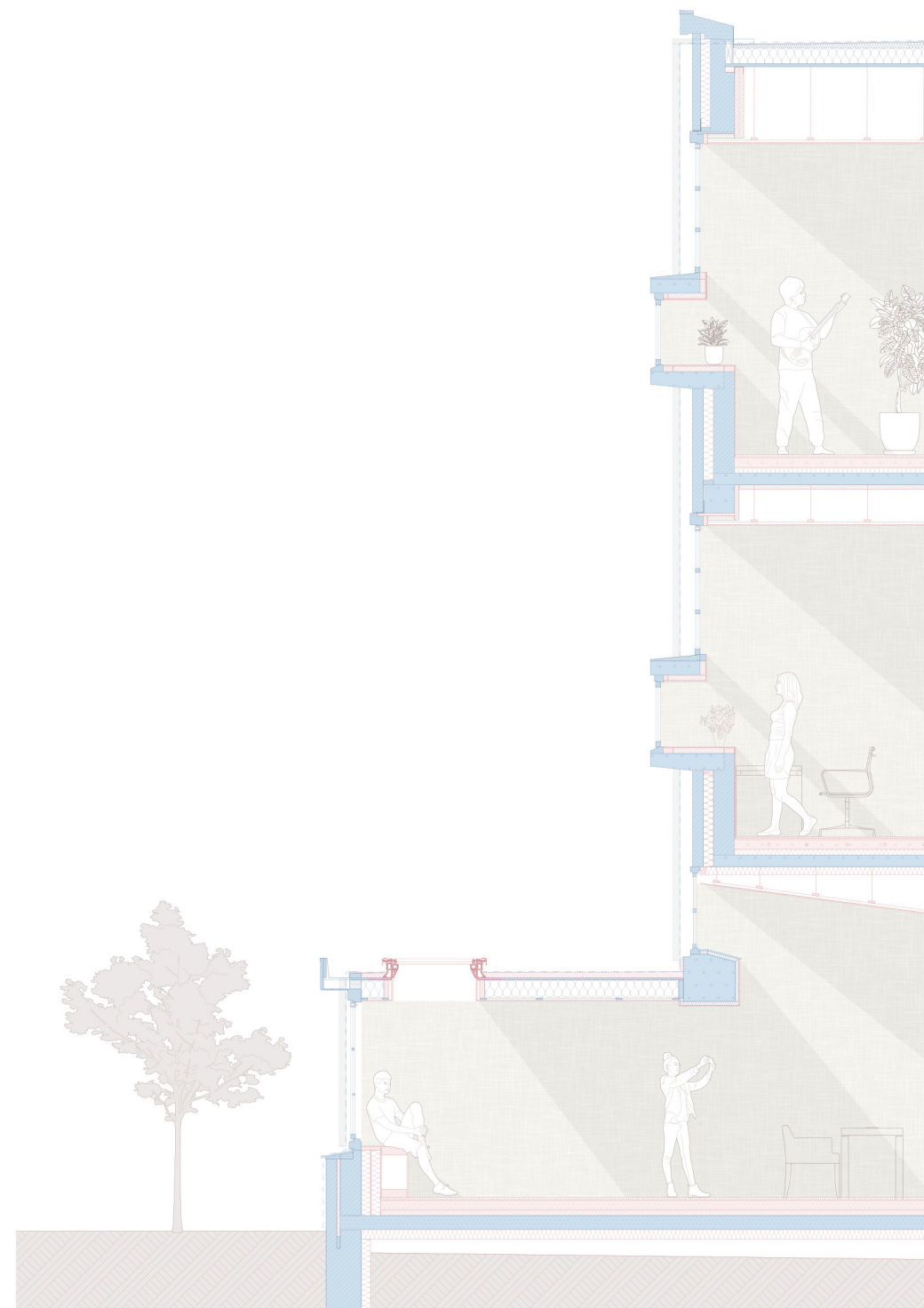


Figure 49 - Combination drawing: South (Protected/Front) facade, modified scale

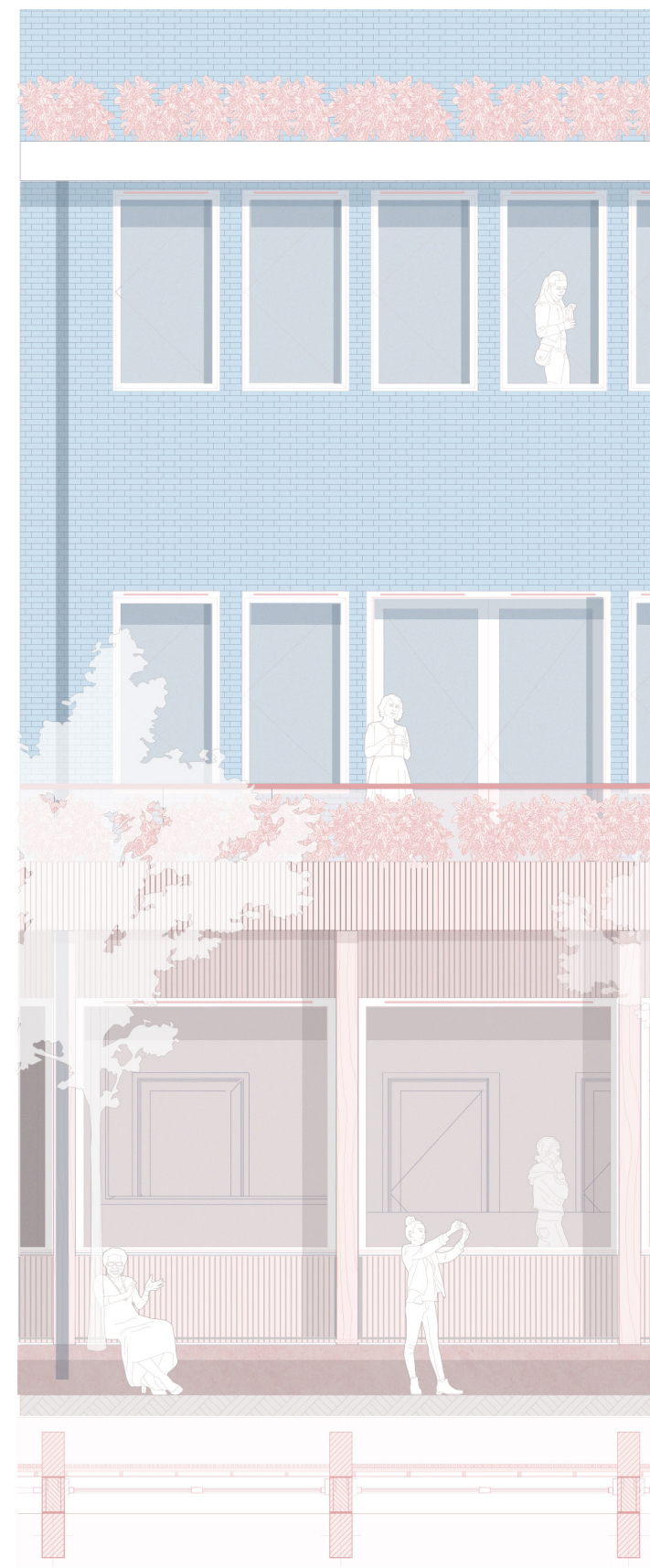
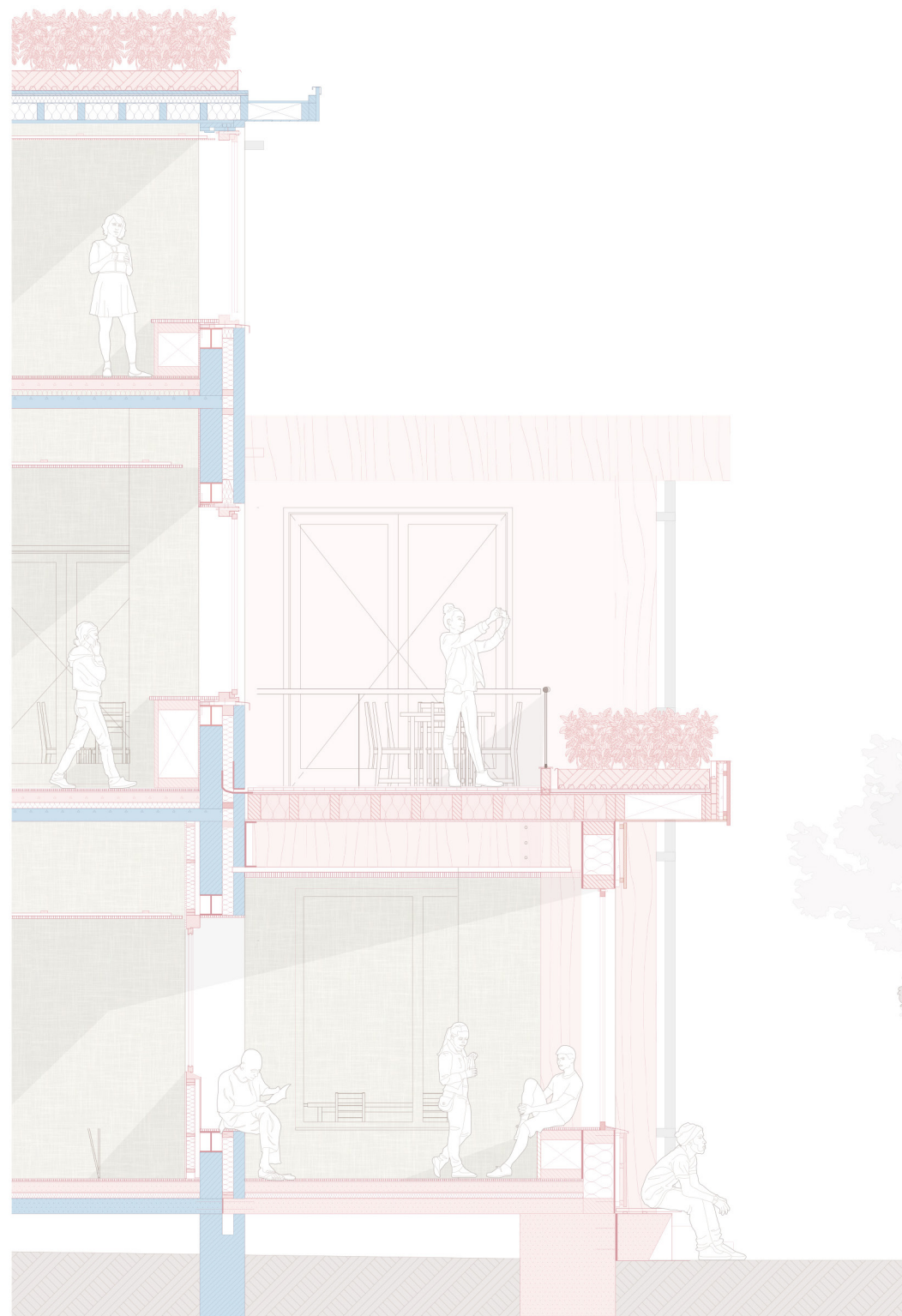


Figure 50 - Combination drawing: North (New / Back) facade, modified scale

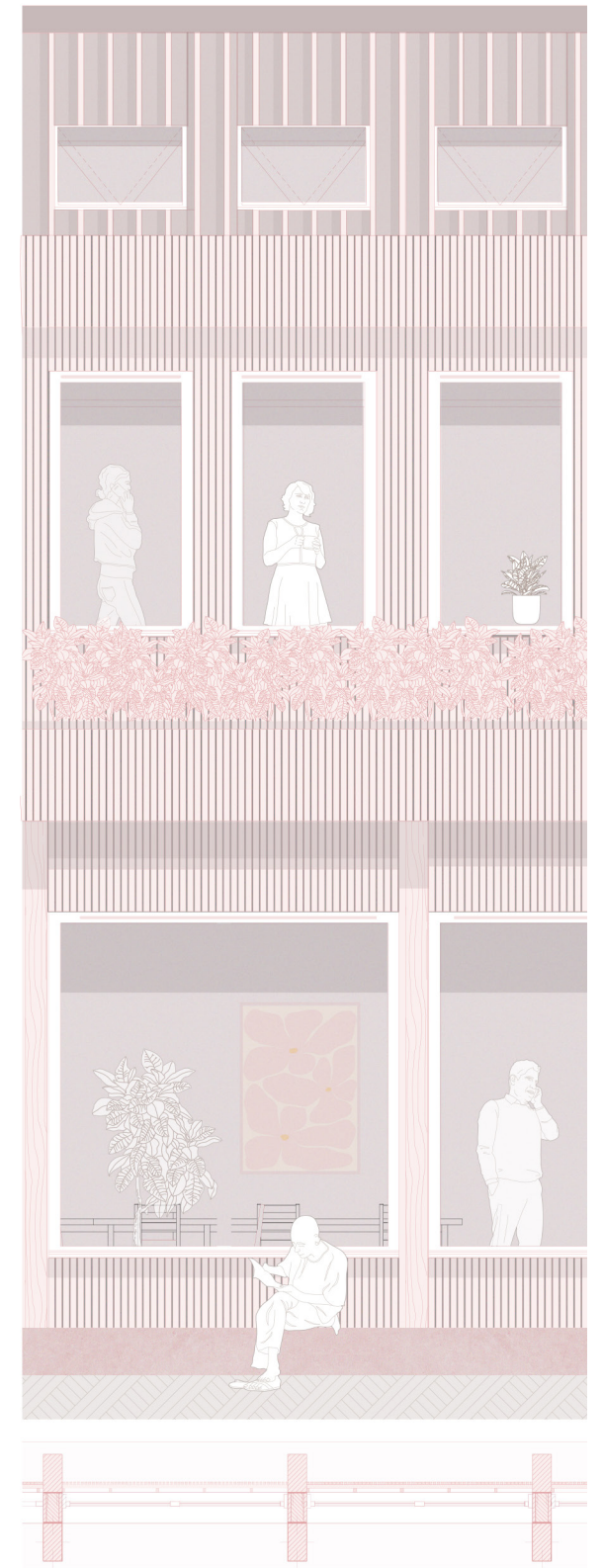
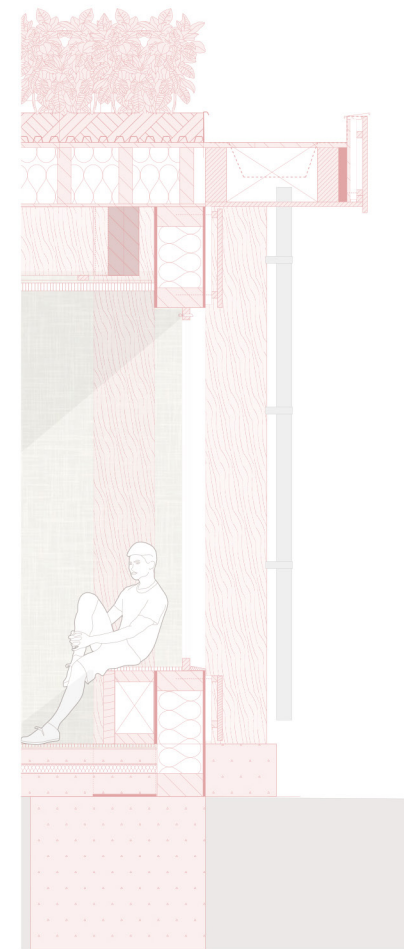
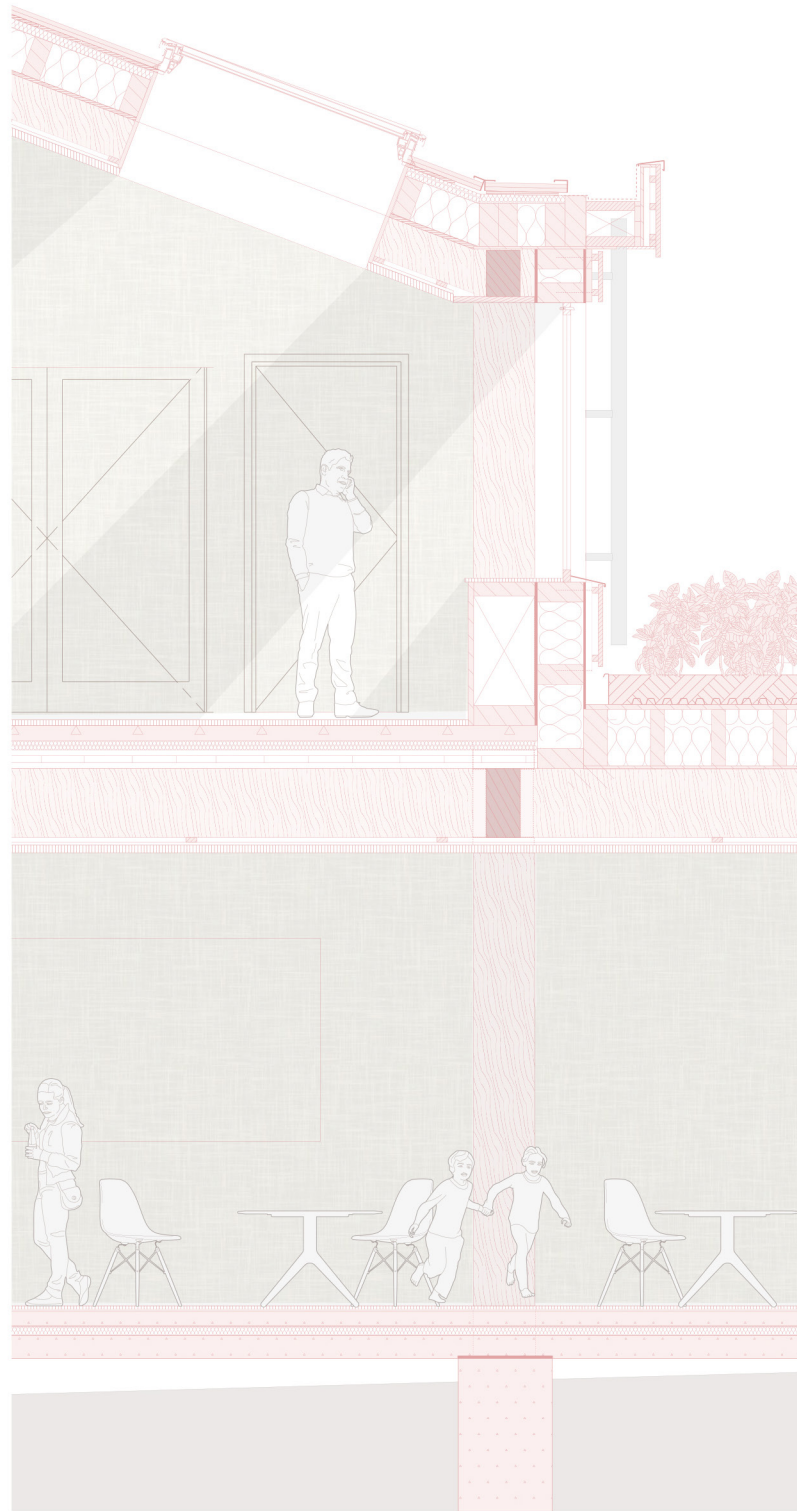


Figure 51 - Combination drawing: South (New / Back) facade, modified scale

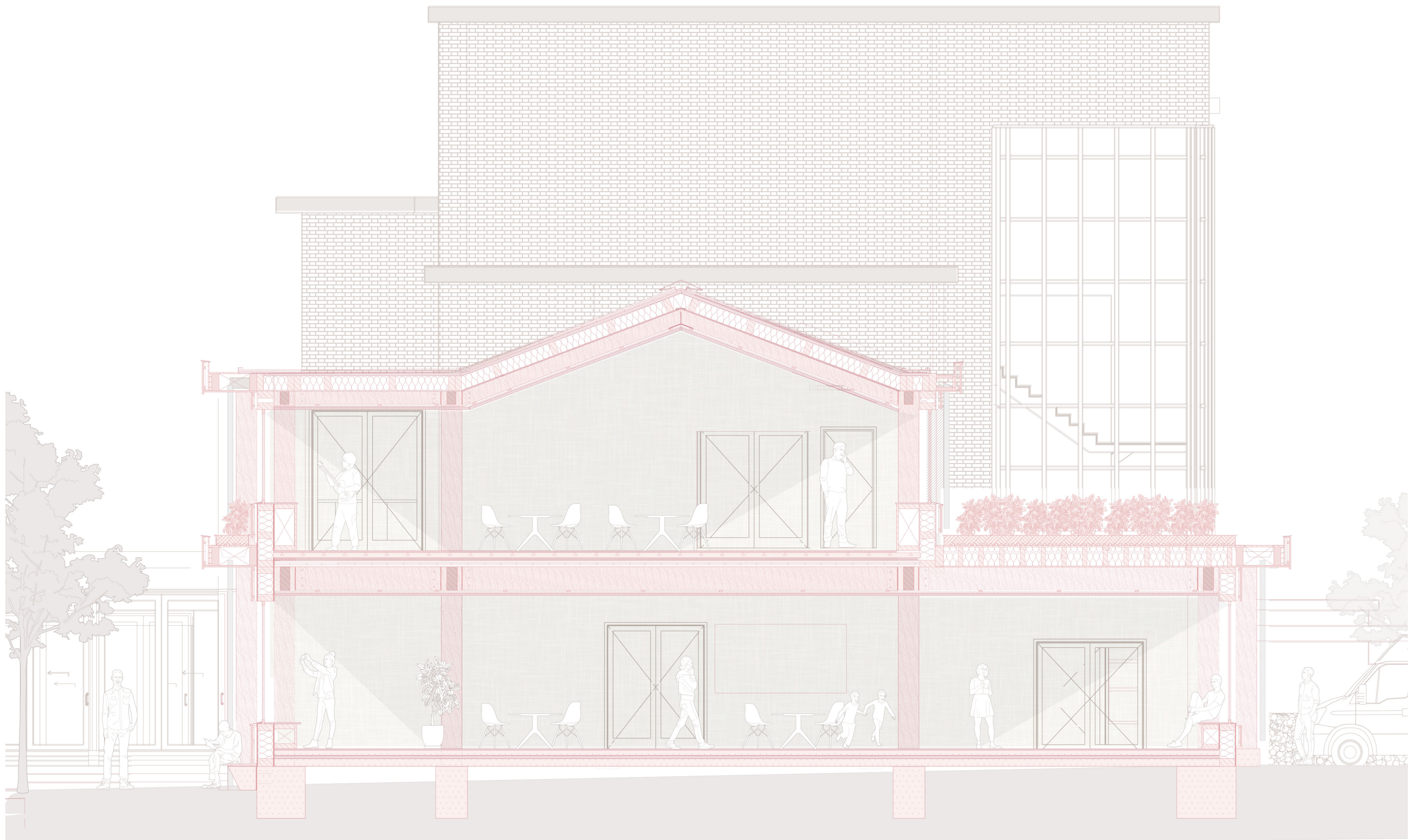


Figure 52 - Community center, detailed section, scale 1:50

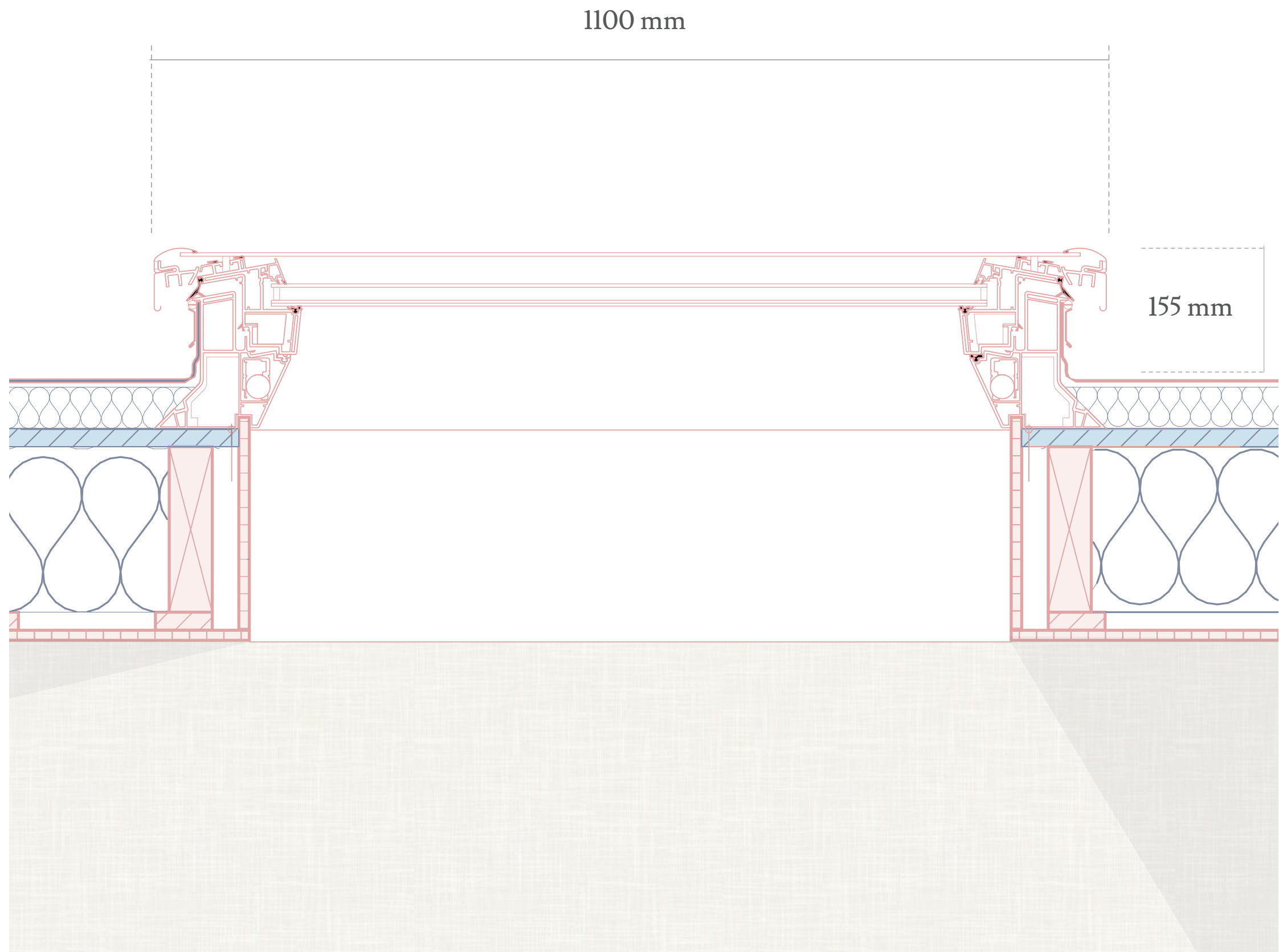


Figure 53 - Velux skylight standard detail, scale 1:5

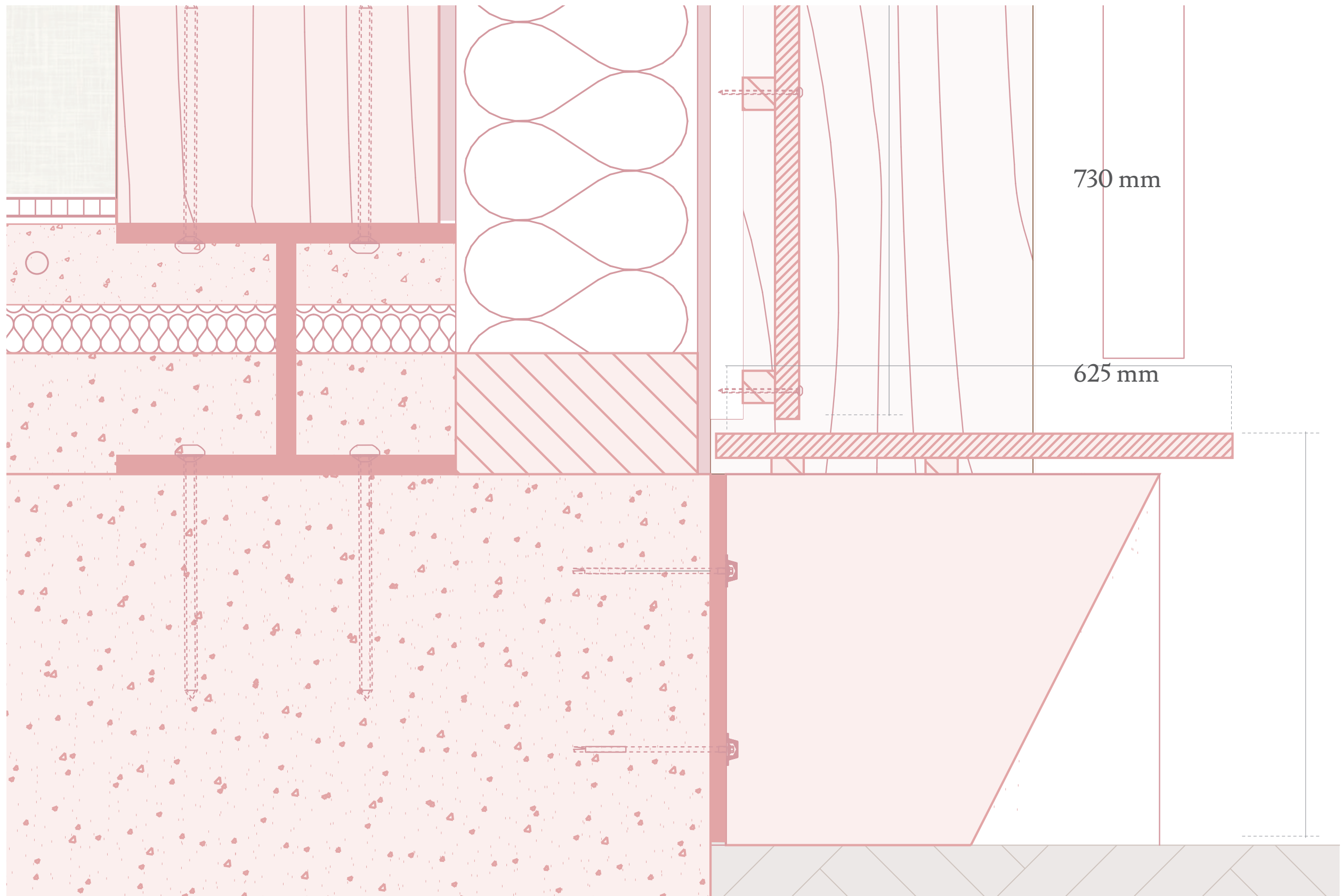


Figure 54 - North facade column to foundation, scale 1:5

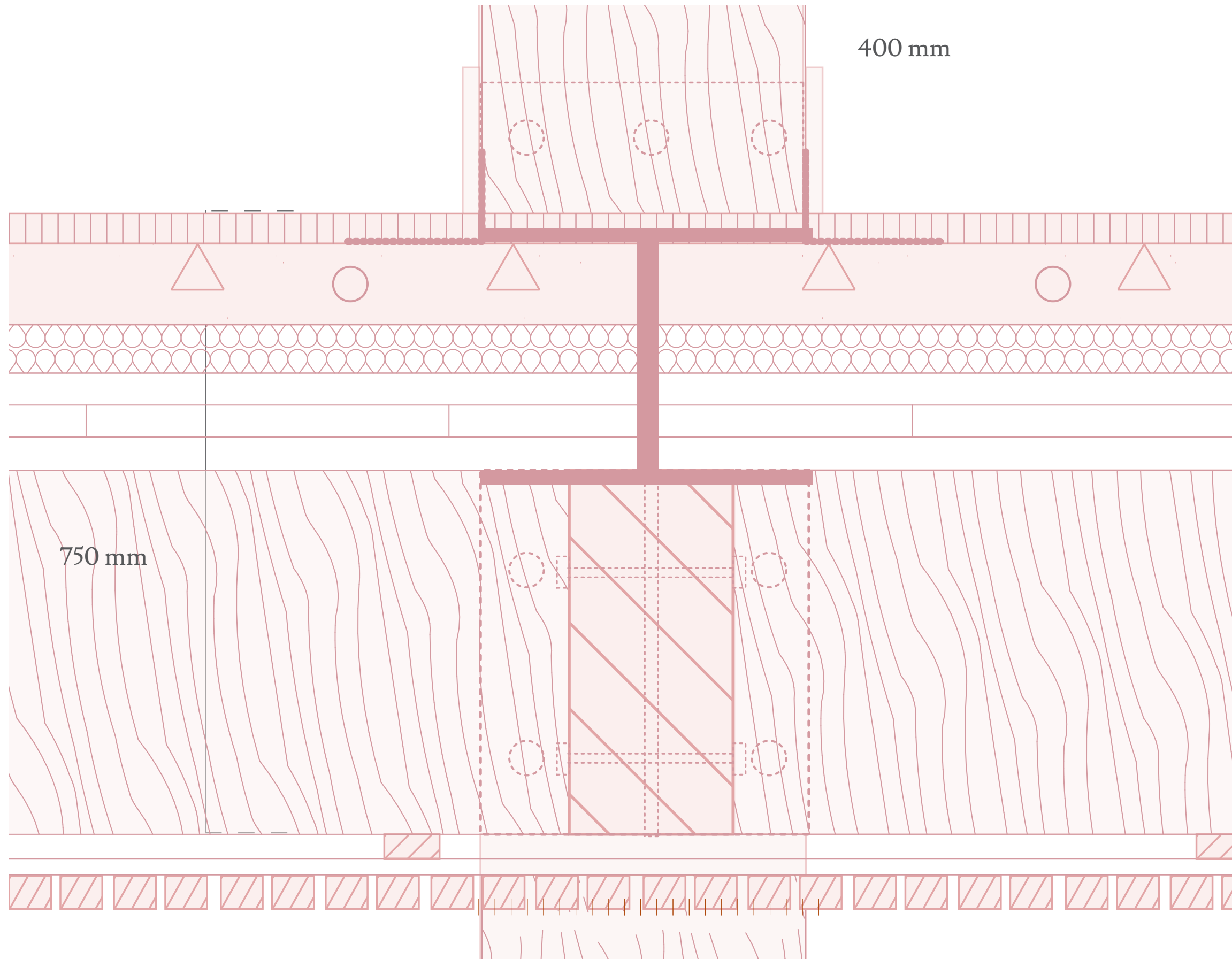


Figure 55 - Glulam column-beam-floor connection, scale 1:5

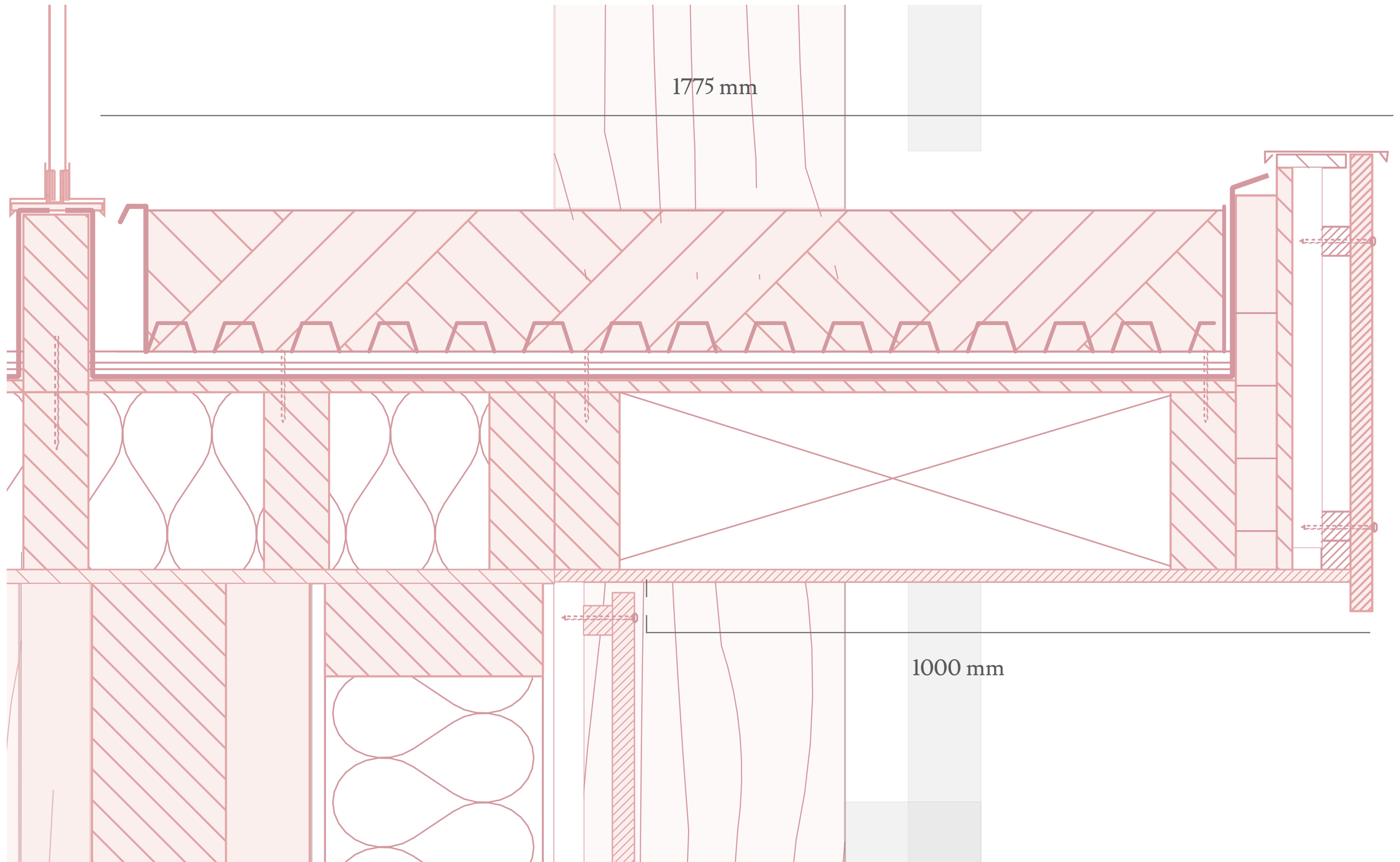


Figure 56 - North Facade balcony edge detail, scale 1:5

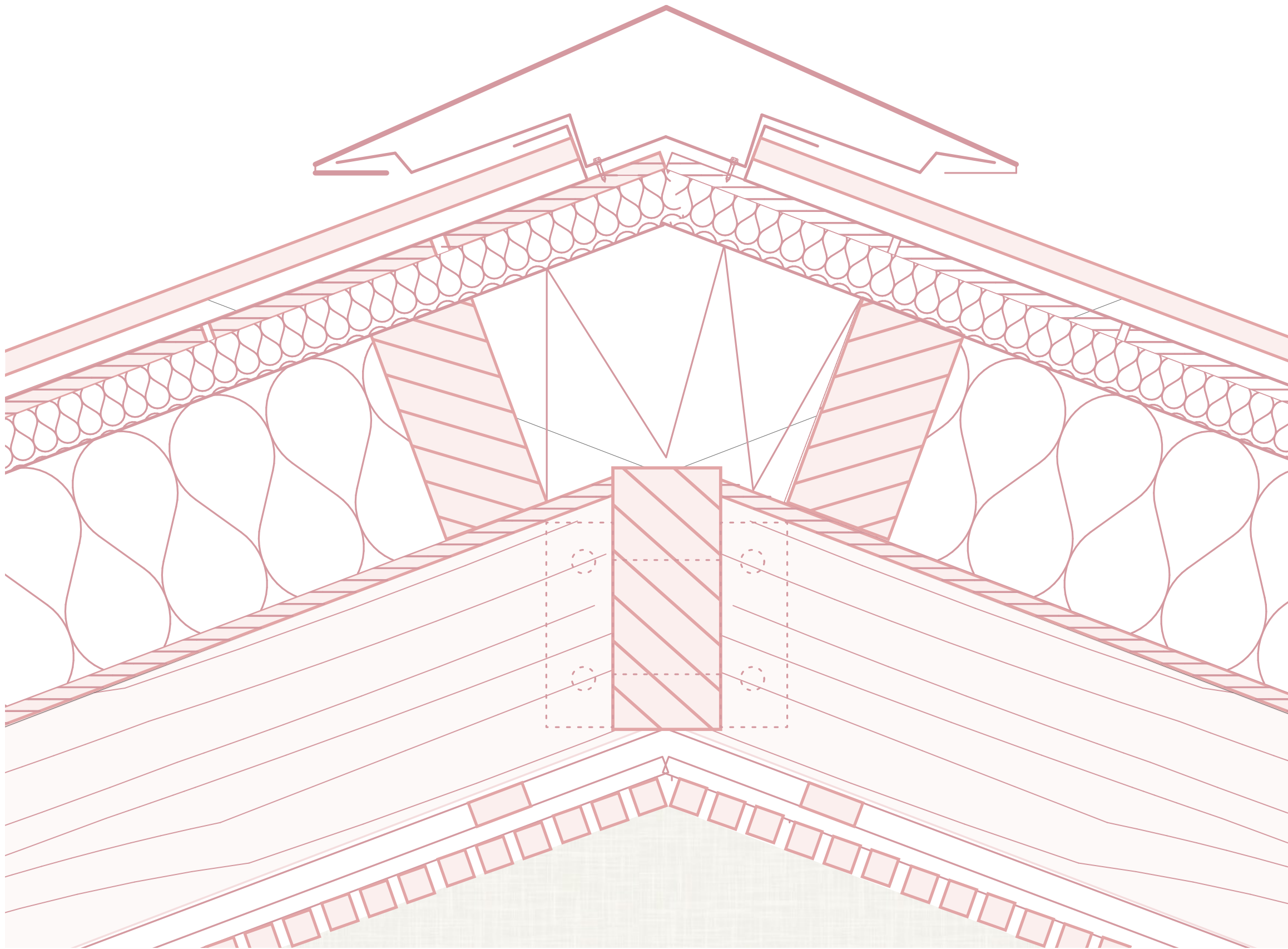


Figure 57 - Roof ridge at the community center, scale 1:5

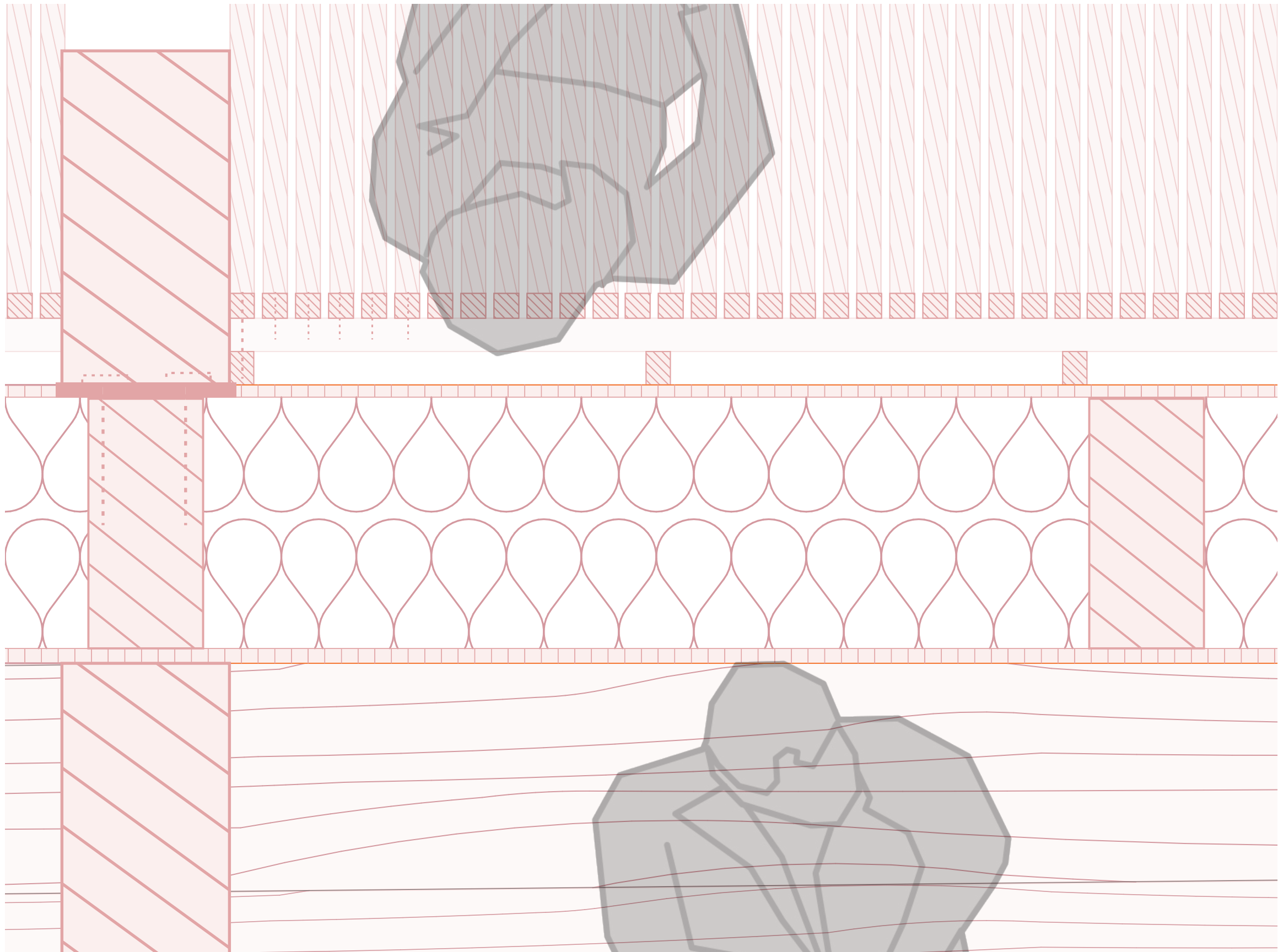


Figure 58 - North facade's integrated bay-window seats and outdoor bench seating (horizontal section), scale 1:5



Figure 59-60 - Facade fragment (Back facade), scale 1:20





Figure 61 - Facade fragment (Back facade), scale 1:20

Sustainability and climate

Relating sustainability themes with the needs of YAIDD

When designing a building specifically for the target demographic of YAIDD, it is crucial to consider their unique symptoms and sensitivities. Visual sensitivity necessitates the incorporation of facade openings to allow for a subdued, diffused natural daylight without stark contrasts of light and shadow. For audio-sensitive individuals, the avoidance of loud spaces is paramount, requiring soundproofing measures such as noise-absorbing ceiling panels, acoustic flooring materials, and soundproof wall compositions.

The Sweetwater Spectrum facility in Sonoma, California serves as an exemplary model of a sustainability-centered center for YAIDD. The project utilized solar panels on the rooftops to generate power and featured abundant green spaces for residents to cultivate fresh vegetables and engage in gardening activities. Noise levels were optimized through the use of noise-absorbing ceiling materials and silent radiant floor heating/cooling systems.

In alignment with the sustainability-focused approach of this master thesis, radiant floor heating and cooling with a ground source heat pump is proposed. The heat pump can utilize nearby canals for energy production, minimizing energy costs. Furthermore, solar panels positioned on the building's upper level can reduce energy expenses associated with its operation. To further mitigate noise levels in residential areas, green buffers are incorporated on balconies, acting as a barrier between noisy football and basketball fields and the serene residential spaces. Mechanical and natural ventilation methods are employed throughout the building to ensure a fresh air supply for its occupants.



Figure 62 - Sustainability scheme reference (Sweetwater spectrum community)
source: <https://www.terrain.org/2023/unsprawl/sweetwater-spectrum-community/>

Figure 10 - New volume and its' relation to the green and blue infrastructure

Green buffers to reduce the noise from football and basketball fields

Supporting biodiversity of Laakkwartier through vegetation

Approximately 495 m² rooftop surface dedicated to solar panels, producing 86,625 KWh per year

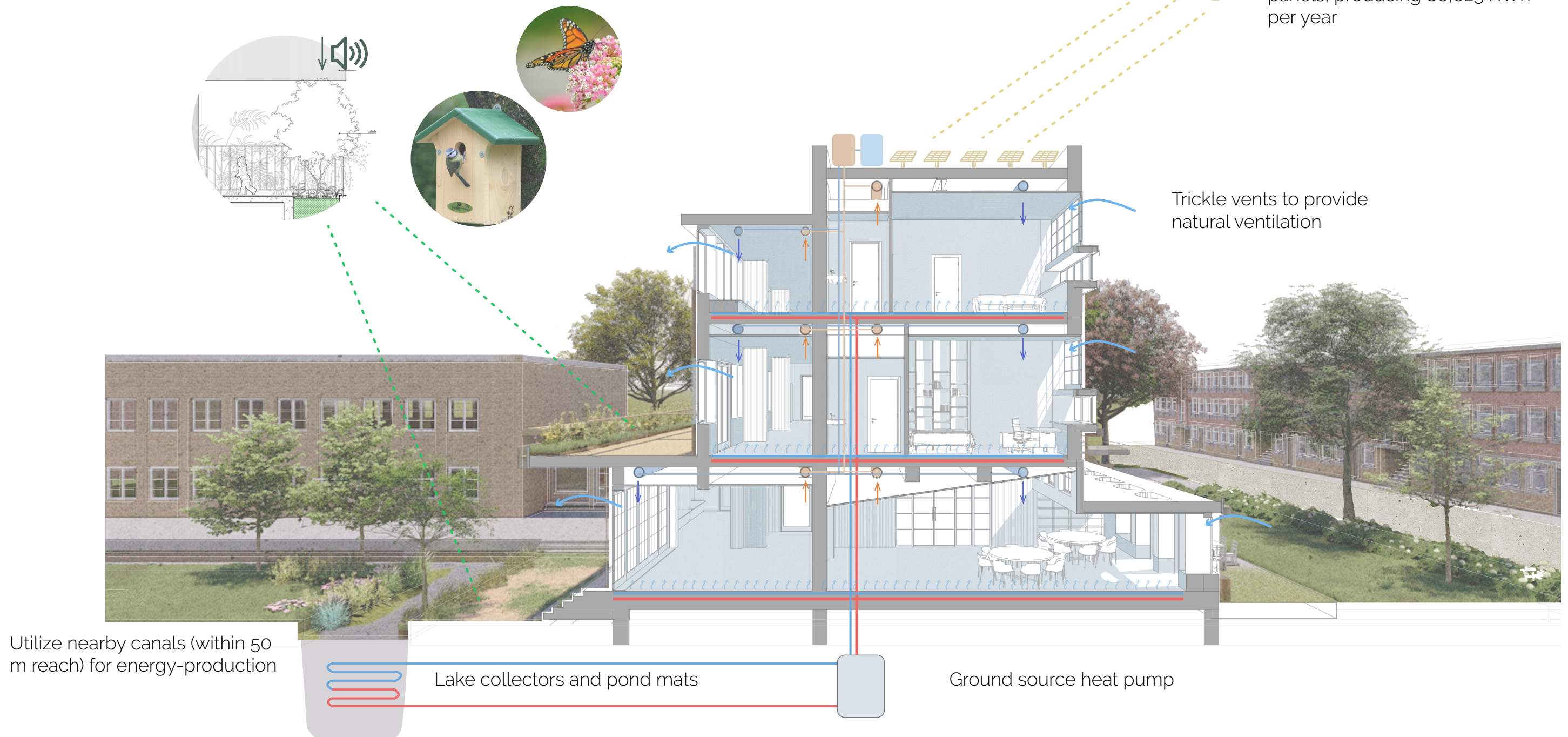
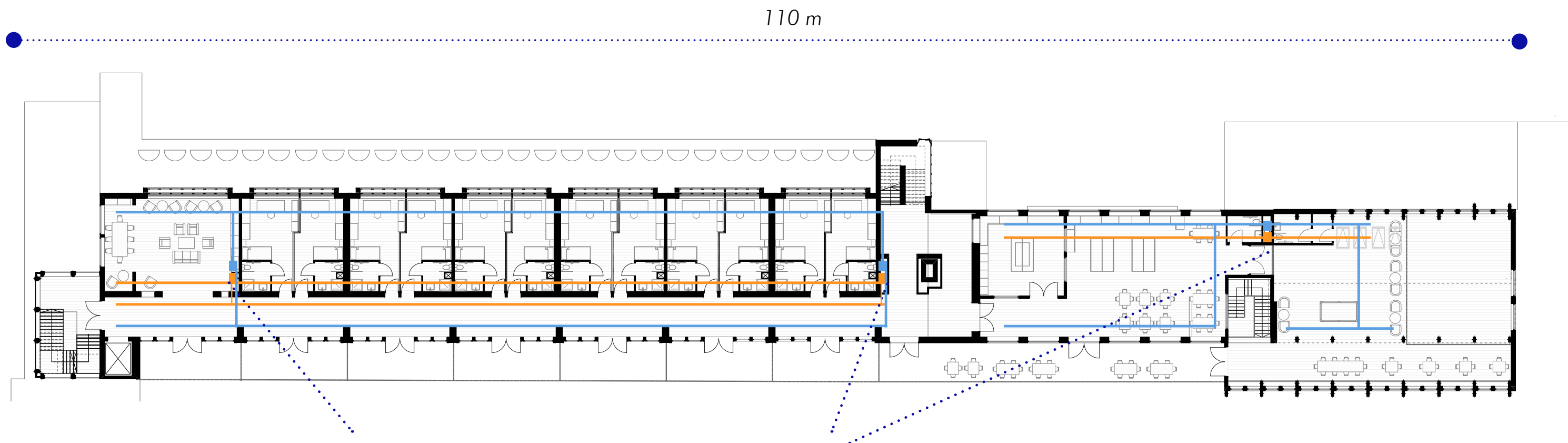


Figure 63 - Sustainability and climate scheme, building section



Rooftop HVAC units (multiple sources)

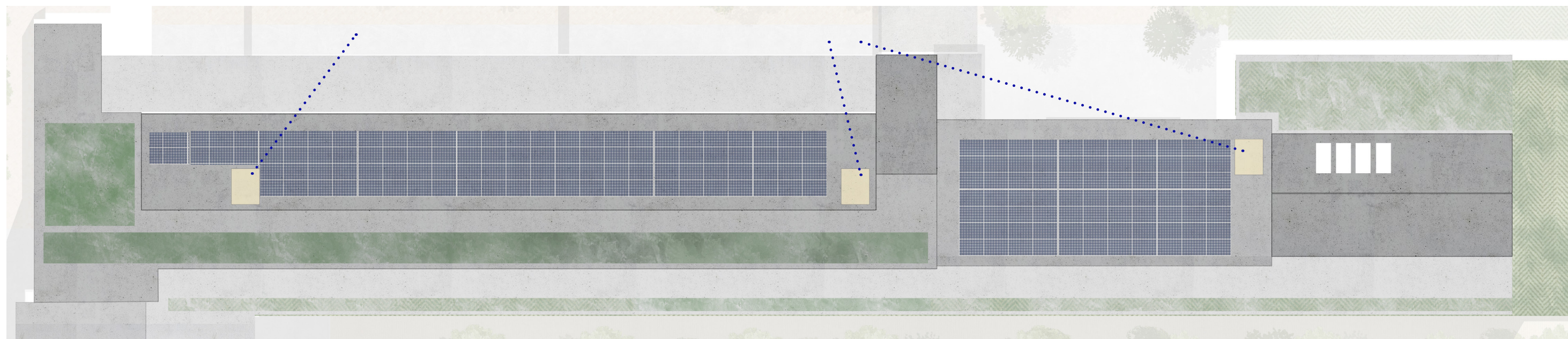


Figure 64 - Roof plans highlighting installations placement for HVAC units, solar panels and green roofs)



Figure 65 - Exterior view of the back facade from the basketball field

